Rocky Intertidal Community Monitoring

2000 Annual Report

CHANNEL ISLANDS NATIONAL PARK

Cover photo by Dan Richards of barnacles, *Tetraclita rubescens* and *Balanus glandula*, with *Littorina scutulata*

National Park Service
Channel Islands National Park

Technical Report

Rocky Intertidal Monitoring
Channel Islands National Park
2000 Annual Report

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Abstract

The 2000 results are presented for the Channel Islands National Park Rocky Intertidal Monitoring Program. Twenty-one permanent sites covering all five park islands were monitored in spring and fall of 2000. This report covers sampling between April 2000 and January 2001. Permanent photoplots were monitored for changes in percent cover of selected indicator organisms. Abundance (density) and size distributions of black abalone, *Haliotis cracherodii*, were taken in both fixed plots and in timed searches. Owl limpets, *Lottia gigantea*, density and size distributions were taken within fixed plots. Seastar (generally *Pisaster ochraceus*) relative abundance was measured in timed searches or fixed transects. Temperature loggers collected hourly temperature data at nine sites. No significant trends or anomalies were found in 2000.

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Executive Summary

Cover of dominant and target organisms were determined in fixed (50 x 75 cm) plots either in the field or from photographs. *Haliotis cracherodii*, black abalone, were counted and measured in fixed irregular plots or in a search of a defined area of the reef. *Lottia gigantea*, giant owl limpets, were measured within fixed circular plots of one-meter radius. *Pisaster ochraceus*, ochre sea stars, were counted in a general search of the reef. *Phyllospadix* spp., surfgrass, cover was measured in fixed point-intercept transects. Special circumstances and general conditions that may have affected sampling were described on daily logs, and reported in the trip reports. Motile invertebrates were counted in the photoplots. Motile invertebrate methods were in the developmental stage in 2000.

All monitoring sites in the park were sampled at least once in 2000, except Sea Lion Rookery, Santa Barbara Island (Table 1). Fall sampling there was delayed by bad weather and brown pelicans had begun nesting early on the slopes above the site. This was the second year in a row that we have not been able to monitor Sea Lion Rookery because of weather and nesting pelicans. Specific observations and findings of the 2000 sampling efforts can be found in the trip reports which follow in Appendix B.

Complete photoplot data are presented in Appendix A and summarized in figures 2-4. Acorn barnacles *Balanus glandula* and *Chthamalus* sp. cover was below the long-term mean at the Anacapa, Santa Barbara, and Santa Cruz island sites and above normal at San Miguel Island. The rockweed cover for both *Silvetia compressa* and *Hesperophycus californicus* was generally above normal except at Santa Cruz Island. *Tetraclita rubescens* cover at Santa Cruz Island was below the mean for the years of monitoring. *Endocladia muricata* cover was above average in spring, but dropped considerably between spring and fall at most sites. *Mytilus* spp. and *Pollicipes polymerus* cover remained stable over time.

Size and density of *Lottia gigantea* remained steady in 2000 (Figures 5-8, Table 4). Populations have been remarkably stable over time except for declines at Ford Point and Johnson's Lee in recent years. Density at both sites remained steady and even increased slightly in 2000.

A total of 160 *Haliotis cracherodii* were found at all the sites in spring 2000 (Tables 2 and 3). The *H. cracherodii* count in fall was much less than the spring counts at San Miguel Island, at least in part because of sea conditions, but was slightly higher at Santa Rosa Island. This was actually a slight increase over 1999 mostly due to good conditions and a good count at Otter Harbor. Few juveniles were found. Only one withered abalone was found at Trailer, Santa Cruz Island.

Pisaster ochraceus were abundant at Landing Cove, Middle Anacapa West, Willows Anchorage, Ford Point, Johnson's Lee, Fossil Reef, and Crook Point (Table 3). The number at Willows Anchorage increased from 6 to 216 between 1998 and fall 2000.

Motile invertebrates (small snails, chitons, limpets, etc.) were counted in photoplots as a means of understanding the community dynamics a little better. The method shows promise but sub-sampling protocols need to be refined.

There were no significant changes in Phyllospadix spp. cover in transects on Santa Cruz Island in 2000 (Figure 9).

Shorebirds and pinnipeds were counted at all sites (Table 5). Black oystercatchers were the most common shorebird. Oystercatchers were seen at almost every site and large groups (8-16) were seen at Northwest Talcott and Fraser Cove. Elephant seals and harbor seals were most common at Otter Harbor and Crook Point. Sea lions were not as abundant at Landing Cove presumably because of the large swell hitting the island when we were there.

In 2000, 2272 people visited the tidepools at Frenchy's Cove, slightly below the 1999 visitation (Table 6). Once again March was the busiest month with 978 visitors

Introduction

The rocky intertidal zone is a compact and diverse area between marine and terrestrial habitats. Marine organisms living within this zone are highly adapted to physical disturbance and severe temperature fluctuations and are subject to both marine and terrestrial predation. The intense pressure from both physical and biological entities has promoted a high diversity of invertebrate and algal assemblages within the rocky intertidal zone. In fact, many organisms are so well adapted to this area that they cannot live without the alternating exposure to both the air and sea.

Channel Islands National Park and National Marine Sanctuary encompass the four northern Channel Islands and Santa Barbara Island off the coast of Southern California. The park islands and surrounding waters bear the designation of an International Biosphere Reserve and State of California Areas of Special Biological Significance. The State of California maintains jurisdiction over the marine resources and manages them through the California Department of Fish and Game.

The undisturbed tide pools are one of the unique features specifically mentioned in the enabling legislation for Channel Islands National Park. The law establishing the park (16-USC-410) also mandated the development of inventories and monitoring of natural resources in the park. Rocky intertidal monitoring began in 1982 with the following goals: 1) to monitor trends in population dynamics of selected indicator organisms, 2) to determine normal limits of variation, 3) to discover abnormal conditions, 4) to provide remedies for management problems, and 5) to measure the success of management actions.

This report summarizes the 2000 sampling year efforts (from April 2000 to January 2001) and findings of the Rocky Intertidal Monitoring Program. Monitoring results were previously reported in Richards 1986, 1988, and 1998, and Richards and Lerma 2000, and 2002. Black abalone monitoring results have been presented in Haaker et al. 1992, Davis et al. 1992, and Richards and Davis 1993.

Methods

Study Area

The California Channel Islands are comprised of eight islands in the Southern California Bight, five of which are included in the Channel Islands National Park. The park islands possess about 323 kilometers (176 miles) of coastline, the majority of which is rocky shore. Rock types vary from hard weathered volcanic basalt or breccias to easily eroded Monterey shale and sandstone. Sites were originally established to include the various exposures and rock types of each of the islands, though broad rocky benches were targeted.

The park islands span the transition zone of the cooler Oregonian biogeographic province and the warmer Californian waters coming up from the south. Mean annual air temperature along the mainland in this area is 15°C. Mean rainfall in about 38 cm per year (Daily et al. 1993). There is a gradient across the island chain with San Miguel Island having the most precipitation, most cloud cover, and most wind. Santa Barbara Island to the southeast is the warmest and driest. The mean monthly sea temperatures range from 13°C in April at San Miguel Island to nearly 20°C at Santa Barbara Island in August and September (Engle and Richards 2001). Swell varies through the year with winter storms bringing high northwest waves during the winter and spring, and distant southern hemisphere storms sending large swells to the south facing shores in summer.

The Channel Islands National Park Rocky Intertidal Monitoring Program has 21 permanent sites on the five park islands (Figure 1). Sites are generally monitored each spring (Feb.-May) and fall (Oct.-Jan.). Visitation was a consideration in site selections. Accessibility, presence of representative organisms, wildlife disturbance, and safety were also considerations in site selection. Sites were established between 1982 and 1994. The monitoring protocol is detailed in Richards and Davis 1988. Additional protocol for Santa Cruz Island is detailed in Engle *et al*. 1998. Updated protocol summaries can be found in Richards and Lerma 2000.

Monitoring

Data are maintained in Microsoft Access and Excel files at Channel Islands National Park. The data (including trip reports, annual reports, and the database) reside within the CINP IM\TIDEPOOL directory.

Fixed plots (50 x 75 cm) were photographed on each visit and the percent cover of target organisms was determined either in the field by laying a string grid over the plot or in the office, projecting the slide onto a grid of 100 evenly spaced points. We used a Nikonos V camera with two Ikelite strobes for even illumination and Ektachrome 100 film for the photography. At each point, the organism under the point was counted as one percent cover. *Haliotis cracherodii*, black abalone, were counted and measured in fixed irregular plots (5 plots per site) or in a search of a defined area of the reef. *Lottia gigantea*, giant owl limpets, were measured within fixed circular plots of one-meter radius (3 to 5 plots per site). *Pisaster ochraceus*, ochre sea stars, were counted in a general search of the reef. *Phyllospadix* spp., surfgrass, cover was measured on fixed point-intercept transects (3 transects per site). Special circumstances and general conditions that may have affected sampling were described on daily logs, and reported in the trip reports. Motile invertebrates were counted in the photoplots by carefully searching through the entire plot. The motile invertebrate methods were in the development in 2000 as a new protocol to provide quantitative information about the small, sometimes cryptic invertebrates that are important to the intertidal community. Some motile invertebrate counts were done in 1997 and 1999 as trials, but 2000 was the first systematic sampling.

Taxonomy and nomenclature follow Smith and Carlton (1975), Abbott and Hollenberg (1976), McLean (1978), and Morris et al. (1980), with algal nomenclature updated by Paul Silva and Kathy-Ann Miller (unpubl.).

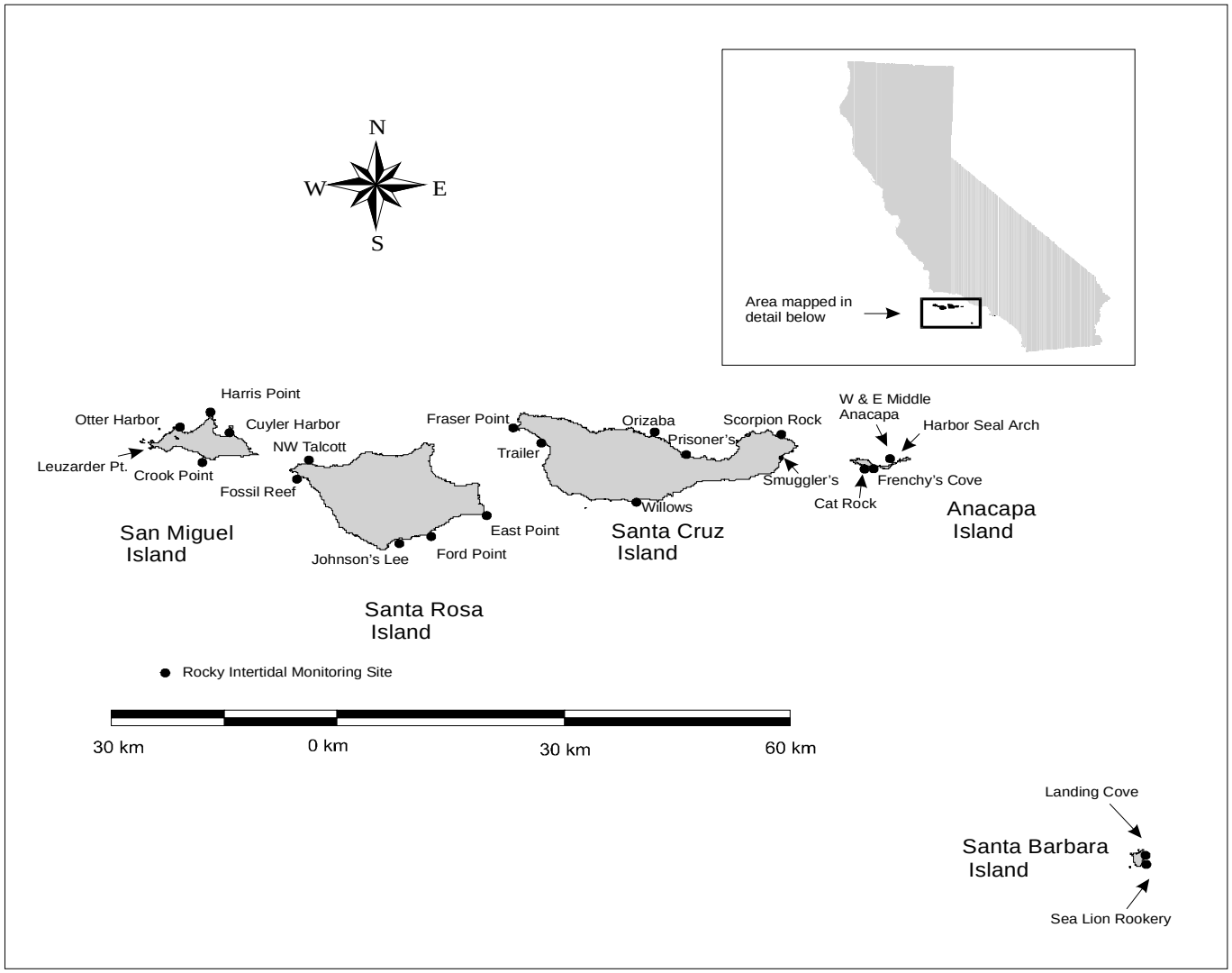


Figure 1. Rocky Intertidal Community Monitoring Site Locations in Channel Islands National Park

Results

All monitoring sites in the park were sampled at least once in 2000, except Sea Lion Rookery, Santa Barbara Island. We have dropped spring sampling at Santa Barbara Island because of conflicts with nesting Brown Pelicans. The fall sampling for Santa Barbara Island in 2000 was delayed because of bad weather until January; however, Brown Pelicans began nesting in early January on the slopes above Sea Lion Rookery and the site could not be accessed without disturbing the nesting birds. This is the second year in a row that we have not been able to monitor Sea Lion Rookery because of weather and nesting pelicans. Table 1 shows the sampling dates for each site.

Specific observations and findings of the 2000 sampling efforts can be found in the trip reports which follow in Appendix B. Our fall sampling period extends into January, so Santa Rosa Island (SRI) sites sampled in January 2000 were reported as part of the fall 1999 effort (Richards and Lerma 2000). Four of the Santa Cruz Island sites and Landing Cove, Santa Barbara Island were sampled in January 2001.

Table 1. 1999 Sampling dates for Rocky Intertidal Monitoring sites

Site	Site Codes	Spring	Fall
Cuyler Harbor, SMI	SMCH	6/4/2000	11/27/2000
Crook Point, SMI	SMCP	6/5/2000	11/24/2000
Otter Harbor, SMI	SMOH	6/6/2000	11/25/2000
Harris Point, SMI	SMHP	6/7/2000	11/26/2000
Fossil Reef, SRI	SRFR	5/7/2000	12/8/2000
Johnson's Lee, SRI	SRJL	5/9/2000	12/10/2000
Ford Point, SRI	SRFP	5/9/2000	12/11/2000
Northwest-Talcott, SRI	SRNWT	5/8/2000	12/9/2000
East Point, SRI	SREP	5/10/2000	12/7/2000
Fraser Cove, SCI	SCFC	4/12/2000	1/6/2001
Trailer, SCI	SCTR	4/11/2000	1/7/2001
Willows Anchorage, SCI	SCWA	4/13/2000	1/8/2001
Scorpion Rock, SCI	SCSR	4/27/2000	#
Prisoner's Harbor, SCI	SCPH	4/10/2000	1/5/2001
Orizaba Cove, SCI	SCOC	4/28/2000	1/5/2001
Cat Rock, ANI	ANCR	6/6/2000	11/12/2000
South Frenchy's Cove, ANI	ANSFC	5/6/2000	11/10/2000
Middle Anacapa-West	ANMW	5/5,5/7/2000	11/11/2000
Middle Anacapa-East	ANME	#	11/11/2000
Landing Cove, SBI	SBLC	--	1/22/2001
Sea Lion Rookery, SBI	SBSLR	--	*

bad weather prevented monitoring, -- no spring samples because of nesting pelicans; *unable to access the site in January due to presence of nesting pelicans.

Photoplots

Photoplot summary data are presented in Figures 2-4 for each indicator taxa by zone. Sample mean percent cover values for each site are compared to the range and mean of yearly cover values for all years at that site. Complete photoplot data for 2000 are presented in Appendix A. Summary tables are included in the trip reports in Appendix B. In 1999 we began reporting a larger list of key species (Appx. A). Summary tables in the trip reports (Appx. B) still report the "lumped" categories corresponding to older reports. Most notably, new categories include: *Tetraclita rubescens*, formerly included in the Barnacle category; *Pollicipes polymerus,* formerly included as Miscellaneous Animals; *Silvetia compressa* and *Hesperophycus californicus* formerly combined as Rockweed.

2000 seemed to be a particularly good year for *Silvetia compressa* (figure 2 and 3). Cover of *S. compressa* was above the long-term mean at most sites on Anacapa, Santa Rosa, and San Miguel Islands. At Santa Cruz Island; however, *S. compressa* cover was at or below the mean. Especially at Orizaba Cove, the 2000 samples were very much lower from the mean cover. Both the *Silvetia* zone and the *Hesperophycus* zone plots had very little cover of the target species there. *Endocladia muricata* dominated in the *Hesperophycus* Zone and various algae and barnacles were prominent in the *Silvetia* Zone. These findings continue the pattern seen in 1999. Fossil Reef Rockweed Zone plots were dominated by bare rock; however, two of the *Endocladia* Zone plots had around 70% *Silvetia compressa* cover.

Hesperophycus californicus was exceptionally abundant in the barnacle plots at Cat Rock covering as much as 90% of one plot and having a mean of 51% for the zone (Appx. A.). *H. californicus* was also abundant in the Rockweed Zone which was established without regard to distinguishing these two species (*Silvetia compressa* and *H. californicus*). All of the Santa Cruz Island sites had below normal *H. californicus* cover in the target zone (figure 4), especially at Orizaba Cove where bare rock dominated in both spring and fall samples. In 2000 we started reporting the rockweed zone plots at Harris Point as *Hesperophycus californicus* though *H. californicus* has always been the only rockweed at that site.

In spring 2000, *Endocladia muricata* dominated a broad swath of the intertidal at Fraser Cove, covering 53% of the barnacle zone and 75% of the *Endocladia* zone. *E. muricata* was abundant in both zones in 1999, but with lower cover. By the fall 2000 season, *E. muricata* cover dropped to only 10% and 37% cover in those zones (see Appx. B). Overall, *E. muricata* cover was above average in spring 2000, but fell below or close to the mean in fall 2000 (figures 2 and 3). Bleached *E. muricata* was observed in fall 2000 particularly at South Frenchy's Cove, Fraser Cove, and Willows Anchorage. The warm dry offshore winds (commonly called Santa Ana winds) may have been to blame. There were frequent and strong Santa Ana winds in the fall/winter of 2000. This phenomenon has been observed before at Willows Anchorage (S. Murray, CSU Fullerton, personal communication).

Acorn barnacle (*Chthamalus spp./Balanus glandula*) cover was below the long-term mean at most of the warmer island sites (Anacapa, Santa Cruz), while the Santa Rosa sites were nearly at the mean, and cover at San Miguel sites was mostly above the long-term mean (figures 2 and 3). Acorn barnacle plots at Prisoners Harbor are subject to rolling cobble stones and plot 826 (B1) is often scoured to bare rock. Acorn barnacle cover tends to be higher in the *Hesperophycus* zone at Prisoner's Harbor which is partly an artifact of the plot placement. Plot 374 (*Balanus/Chthamalus* zone) at Otter Harbor was dominated by red algae (primarily *Chondracanthus canaliculatus, Mazzaella affinis,* and *Mastocarpus papillatus*) as it has been for several years since the black abalone population crashed around 1992.

No significant or alarming trends were noticed among the *Mytilus californianus* which tend to be fairly stable (figures 2 and 3). Several of the mussel plots at Johnson's Lee were dominated by *Phragmatopoma californica* and have been for several years. Four of the five mussel plots at Johnson's Lee are on the low reef shelf where *Pisaster ochraceus* have devoured many of the mussels.

Red Algal turf was monitored at Landing Cove (figure 4). This zone is composed of a variety of red algae, primarily *Gelidium* spp. *Pterocladiella capliacea*, and *Chondracanthus canaliculatus*. Cover of these species was generally high in all the plots, though the 2000 mean was slightly lower than the long-term mean because of *Phyllospadix* sp. cover (over 50%) in two plots. Miscellaneous algae (most often *Egregia menziesii* and *Prionitis lanceolata*) were sometimes common. *Phragmatopoma californica* was common underneath the algal or surfgrass layer.

Tetraclita rubescens was monitored at Orizaba Cove and Scorpion Rock and in established barnacle plots at Harris Point (figure 4). Large *T. rubescens* dominate small patches in the mid-intertidal zone at Orizaba Cove. The cover was down by nearly a third of the long-term mean at both Orizaba Cove and Scorpion Rock. We have not differentiated *T. rubescens* from other acorn barnacles long enough at Harris Point to compare over time.

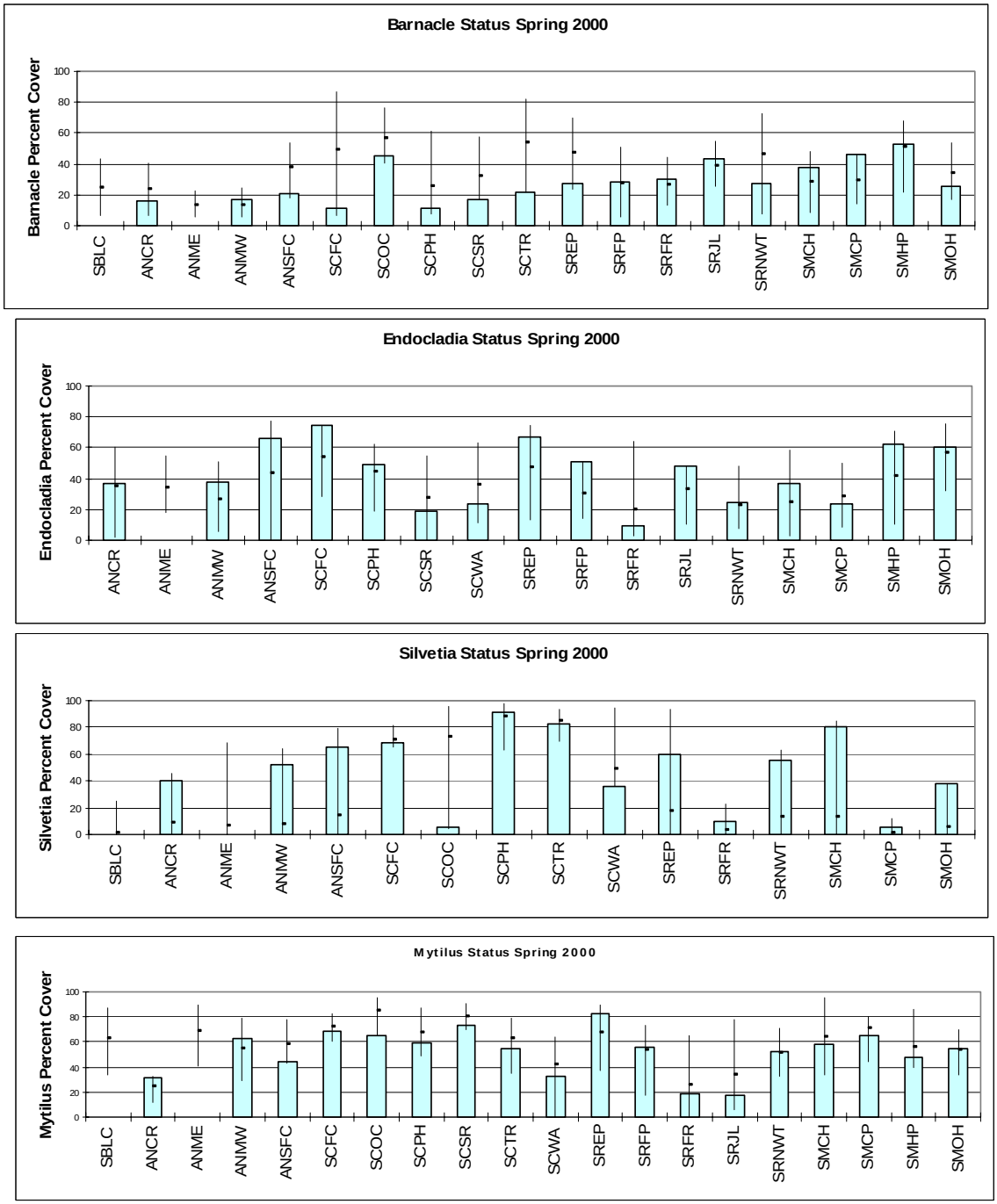
Pollicipes polymerus (figure 4) is only targeted at Fraser Cove where it maintains a low but consistent cover. The *Pollicipes* zone plots are at about the same tide level as the

Mytilus zone plots but are all on the outer edge of the reef whereas the *Mytilus* zone plots are on the side of the reef slightly more protected from the large surf that occurs at this site.

Tar is targeted in plots at Fraser Cove where it is abundant on rocks in the high intertidal zone (figure 4). Tar presumably comes from natural seeps offshore and is monitored to observe persistence or accumulation over time here. Tar cover did not change appreciably over the year or since the monitoring began. The most common living organisms in the tar zone were *Chthamalus* spp. and weedy alga species, usually *Porphyra perforata* or *Ulva* spp.

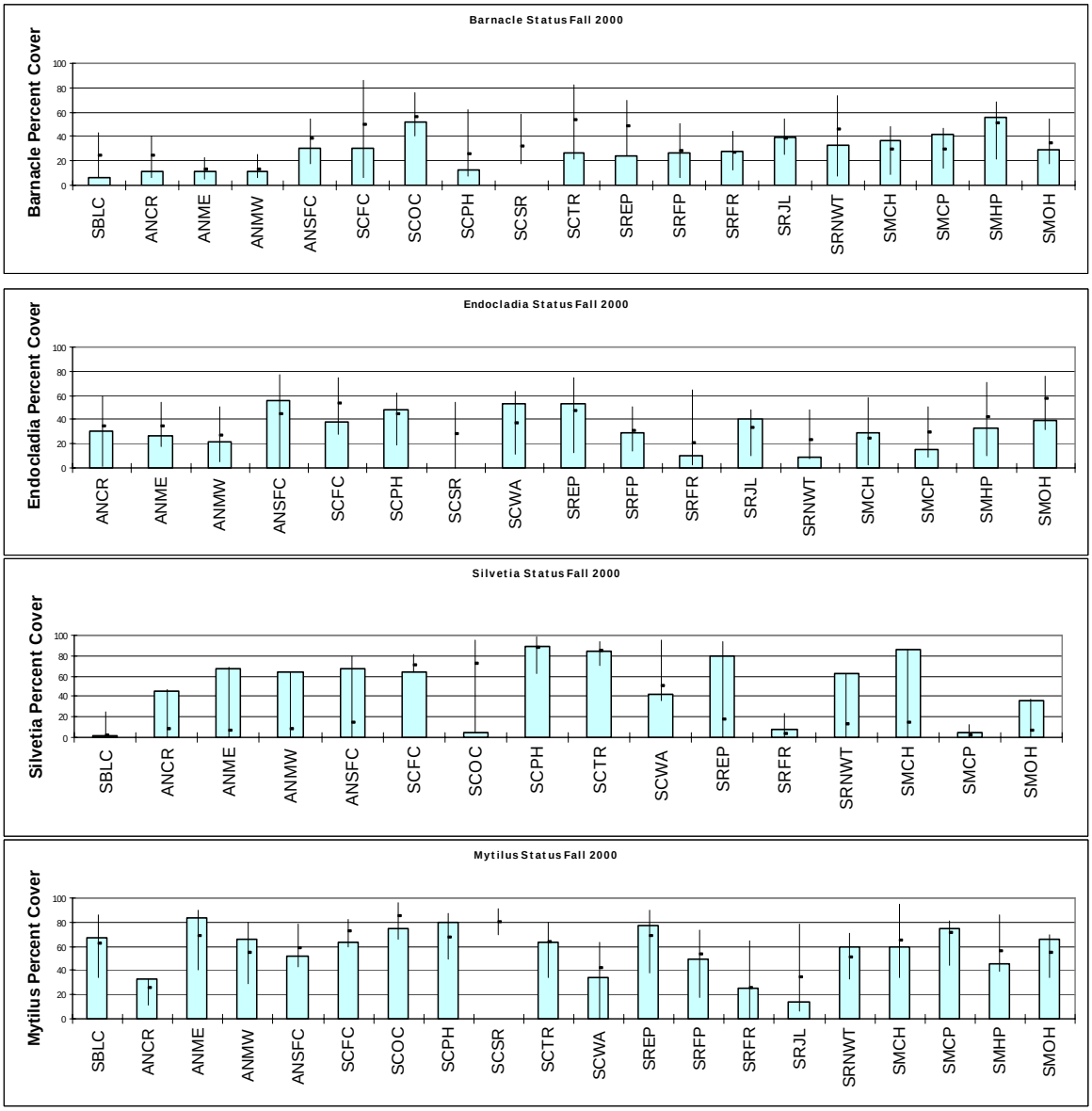
Motile invertebrates

Motile invertebrates are primarily small snails, limpets, and chitons. These were counted within photoplots at sites during the fall sample. Results tables are included in trip reports in Appendix. B. Note that only *Littorina* spp. and *Lottia* spp. over 1 cm were counted in the motile invertebrate counts. Methodology for motile invertebrates was still under refinement in 2000 as we looked for more efficient ways to collect the most significant information. .



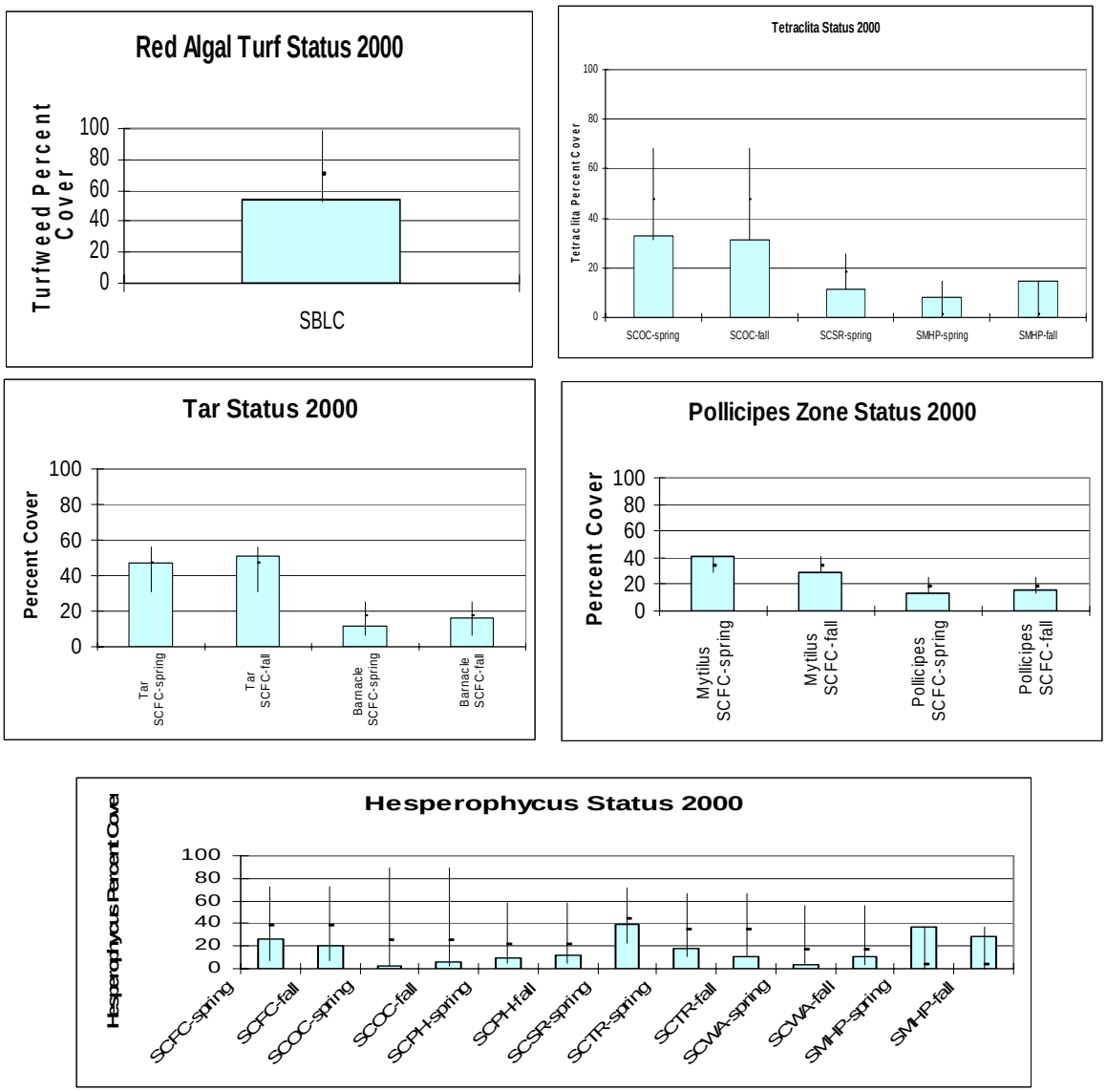
Bars represent the fall 2000 mean percent cover from five1 plots within that zone. Vertical lines represent the range of means since monitoring began at that site. Horizontal lines mark the overall mean for all years at that site. Sites without bars were not sampled this season. See Table 1 for explanation of site codes.

Figure 2. **Percent cover of target taxa within fixed plots by zone, spring 2000.**



Bars represent the fall 2000 mean percent cover from five1 plots within that zone. Vertical lines represent the range of means since monitoring began at that site. Horizontal lines mark the overall mean for all years at that site. Sites without bars were not sampled this season. See Table 1 for explanation of site codes.

Figure 3. **Percent cover of target taxa within fixed plots by zone, fall 2000**.



Bars represent the fall 2000 mean percent cover from five1 plots within that zone. Vertical lines represent the range of means since monitoring began at that site. Horizontal lines mark the overall mean for all years at that site. Sites without bars were not sampled this season. See Table 1 for explanation of site codes.

Figure 4. Percent cover of target taxa within fixed plots by zone in 2000 (zones not represented at all sites).

Haliotis cracherodii

A total of 160 abalone were measured in spring 2000. Survey conditions were not as good in the fall because of large waves and the fall count at San Miguel Island was half of the spring count. Santa Cruz and Santa Rosa counts were slightly higher in the fall (by only 6 and 5 abalone respectively). The minimum size found was 30 mm and the maximum was 156 mm. Both the smallest and largest black abalone were found on San Miguel Island. *Haliotis cracherodii* were most abundant at San Miguel Island, primarily at Otter Harbor. Harris Point, Fossil Reef, and Trailer were the only other sites where more than 10 abalone were found. No abalone were found at Cuyler Harbor, Orizaba Cove, Prisoner's Harbor, Middle Anacapa, South Frenchy's Cove, or Landing Cove. Counts were not made at Sea Lion Rookery or Scorpion Rock which had few or no abalone in recent years. The thirty–minute searches were meant to collect presence/absence data and relative sizes. Caution should be applied when using these data for comparative purposes as weather conditions and skill level of the person searching may vary the results. Heavy surge affected the fall counts at SMI. Only one obviously withered abalone (at Trailer) was noted in 2000.

Table 2. *Haliotis cracherodii* density and sizes pooled by island in 2000.

Island Code	Year	Season	Count	*Count Density	Area	Density	Count Sized	Mean Size	StDev	Min Size	Max Size
AN	2000	sp	1	0	18.50	.00	1	86.00		86	86
AN	2000	Fa	1	0	11.00	.00	1	99.00		99	99
SC	2000	sp	8	0		.00	8	92.75	30.13	51	139
SC	2000	Fa	14	0		.00	14	96.57	31.39	35	135
SR	2000	sp	20	0	65.80	.00	20	107.45	27.19	67	152
SR	2000	Fa	25	0	143.00	.00	25	105.52	25.21	55	153
SM	2000	sp	131	13	58.20	.22	144	83.92	25.72	30	153
SM	2000	Fa	54	9	58.20	.16	63	94.30	28.06	42	156

*Density counts are abalone found within fixed plots. Counts include 30-minute search effort.

Pisaster ochraceus

Counts of seastars in either timed searches or transects are presented in Table 3. Large numbers of *Pisaster ochraceus* were present at Johnson's Lee and Ford Point as has been the case for a number of years. Their presence at Johnson's Lee has had a much greater impact on *Mytilus californianus* cover there than at Ford Point. Seastars were abundant at Landing Cove; however heavy surge conditions did not allow us to conduct a count there in 2000. Crook Point had high numbers of *Pisaster ochraceus* but the reef is subject to large swells and it was difficult to conduct thorough, consistent searches.

The numbers of *P. ochraceus* at Willows Anchorage were the highest of any site at Santa Cruz Island and increased from 27 in spring 1999, to 95 in fall 1999, to 131 in spring 2000 to 216 in fall 2000. In fall 1998, only six *P. ochraceus* were counted at Willows Anchorage following the El Niño period of 1997-1998 and there were very low numbers of seastars at most islands. Based on this frame of reference, seastars were noted as having a high population at Trailer after finding 16 *P. ochraceus*. A large drop in the number of seastars was seen at Middle Anacapa in fall 2000. Conditions and search effort may have been better in the spring sample but the numbers of seastars definitely seemed to be lower, as noted in the log notes. No seastars were found in searches at South Frenchy's Cove or Cat Rock. Cuyler Harbor, Northwest Talcott and Fraser Cove each had six or fewer seastars on any count.

Heavy surge affected the fall counts at San Miguel Island and both fall and spring surveys at most sites on Santa Rosa Island. Tide conditions and logistics sometimes worked against us at other sites, preventing us from getting good counts.

Lottia gigantea

Lottia gigantea are large grazers mostly found in the mid- to high intertidal zone. Smaller *L. gigantea* (10-50 mm) are commonly found living on large mussel shells, while large females (*L. gigantea* are protandrous hermaphrodites -males change into females as they age) typically establish territories, often on open rock (Ricketts *et al.* 1985, Stimpson 1970). The largest individual found in 2000 was at Northwest-Talcott and measured 99 mm in length. Not surprising, Northwest-Talcott had the largest mean size of 64 mm (Fig. 5). The mean size at all of the Santa Rosa Island sites was large, which is probably related to the plots mostly being in the high zone on open flat rock. By contrast, plots at Santa Cruz Island and Anacapa Island typically had a fair number of mussels in the plots. This may partially explain the smaller mean size of *L. gigantea* at those islands (Table 4). Willows Anchorage had the most mussels in limpet plots on the whole and had the smallest mean size (Figure 6). The density and mean size for sites has been surprisingly stable through the years (Figures 5-8). The size distribution for individual sites and plots can be found in the trip reports Appendix B.

Porphyra perforata, a weedy red alga that can be cyclic in cover was very abundant, making counting *L. gigantea* difficult at Fraser Cove in spring 2000.

Table 3. Sea star and black abalone searches in 2000. (-- indicates no plot or transect, nc indicates no count performed, P.o.= *Pisaster ochraceus*, P.g.=*P. giganteus,* A.m.= *Asterina miniata.***)**

Site	Seastars in 30 min	Sea stars in transects	Abalone in plots	Abalone in 30 minutes
San Miguel Island				
Crook Point 6/00	100 P.o.	8 P.o.(in ab plots)	2	10
Otter harbor 6/00	25P.o.,5P.g.,2A.m.	-	5	110 (60 min.)
Cuyler harbor 6/00	1 P.o.	-	-	Nc (marginal tide)
Harris Point 6/00	4 P.o., 2 A. m.	2 P.o. (2x12m)	6	19
Cuyler Harbor 11/00	5 p.o.	-	-	0
Otter Harbor 11/00	19 P.o., 1 P.g.	-	2	66 (22 not measured)
Crook Point 11/00	58 P.o.	-	0	3
Harris Point 11/00	Nc	2 P.o., 1 A.m.(2x12m)	7	28 (11 not measured)
Santa Rosa Island				
Ford Point 5/00	72 (poor conditions)	-	nc	Nc
Fossil Reef 5/00	Nc	17 P.o. (30x6m)	0	17
Northwest Talcott 5/00	4 P.o., 2 A.m.	-	0	0 (2 found after 30 min)
Johnson's Lee 5/00	Nc	-	Nc	Nc
East Point 4/99	37 P.o.	-	0	1
East Point 12/00	90	-	0	2 (3 more outside area)
Johnson's Lee 12/00	Nc	39, 101 in two 10x2m transect	0	1 (+1 later)
Ford Point 12/00	Nc	63,39,19 P.o. in three 10x2m transect	0	3
Fossil Reef 12/00	Nc	12 P.o. (15x6m)	0	14 (+7 after 30 min)
Northwest Talcott 12/00	5 P.g., 2 A.m.	-	0	6
Santa Cruz Island				
Orizaba Cove	P.o. present	-	-	Nc
Scorpion Rock	26	-	-	0
Trailer 4/00	16 P.o., 1 P.g.	-	-	4
Fraser Cove 4/00	6 P.o.	-	-	2
Willows Anchorage 4/00	131 P.o., 1 P.g., 2 A.m.	-	-	2
Prisoner's Harbor 4/00	9 P.o.	-	-	0
Willows Anchorage 1/01	216 P.o., 6 P.g., 3 A.m.	-	-	1
Trailer 1/01	6 P.o., 1 P.g., 1 A.m.	-	-	13 (1 withered)
Prisoner's Harbor 1/01	2 P.o.	-	-	0
Fraser Cove 1/01	1 P.o.	-	-	0
Orizaba Cove1/01	39 P.o., 1 P.g.	-	-	0
Anacapa Island				
S. Frenchy's Cove 5/00	0	-	-	0
Car Rock 6/00	0	-	0	1
Middle Anacapa 5/00	107 P.o.	-	0	0
Middle Anacapa 11/00	13 P.o.	-	nc	1
S. Frenchy's Cove 11/00	0	-	-	0
Cat Rock 11/00	0	-	0	1
Santa Barbara Island				
Landing Cove1/01	Nc	Nc	-	Nc

*-Late in tide. !-No timed-search because of heavy surge

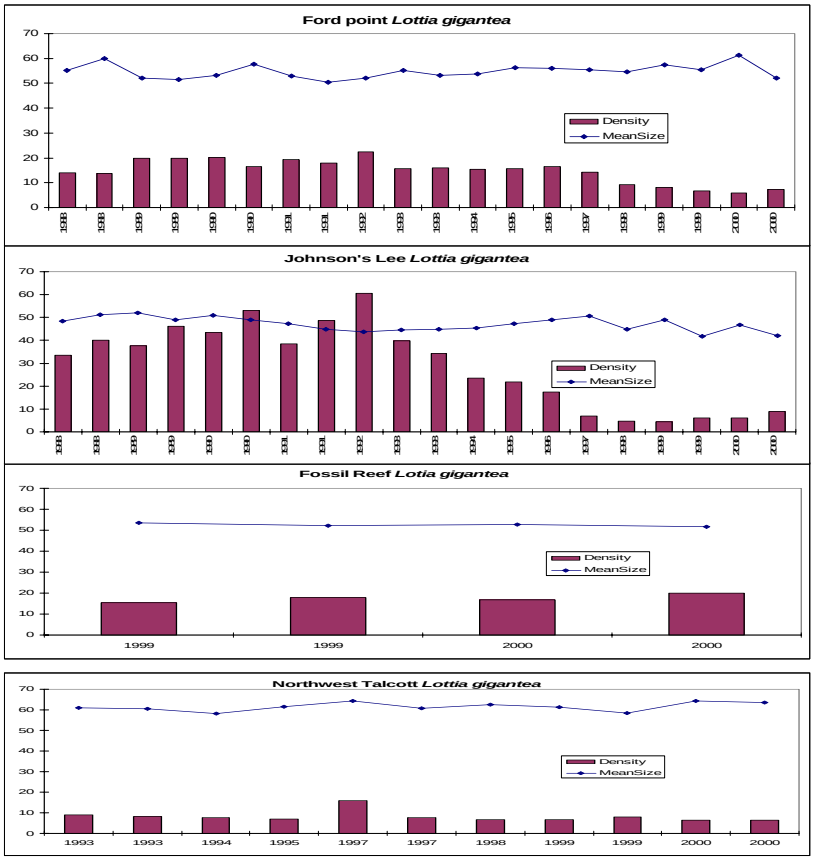


Figure 5 *Lottia gigantea* size (mm) and density (#/m2) at Santa Rosa Island.

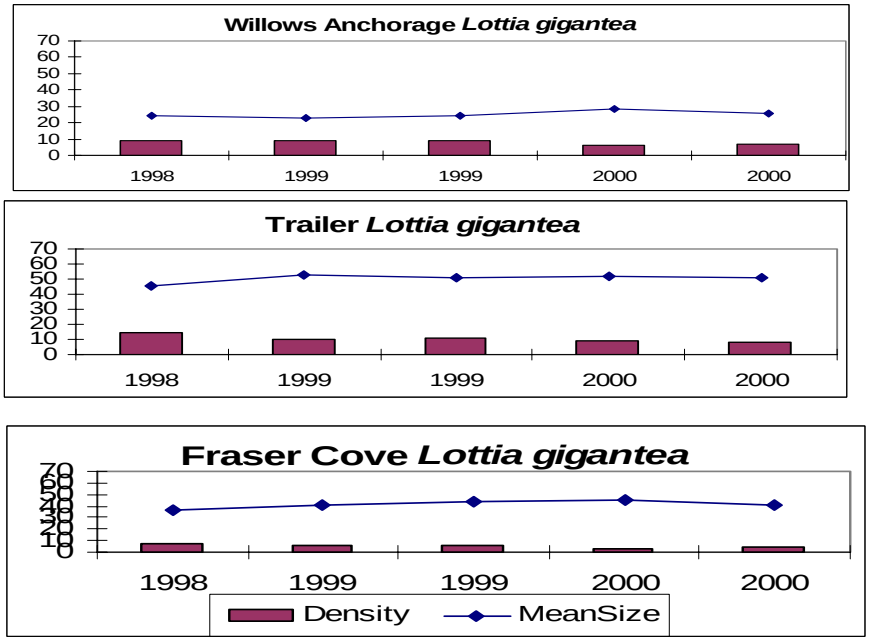


Figure 6. ***Lottia gigantea* size (mm) and density (#/m2) at Santa Cruz Island**.

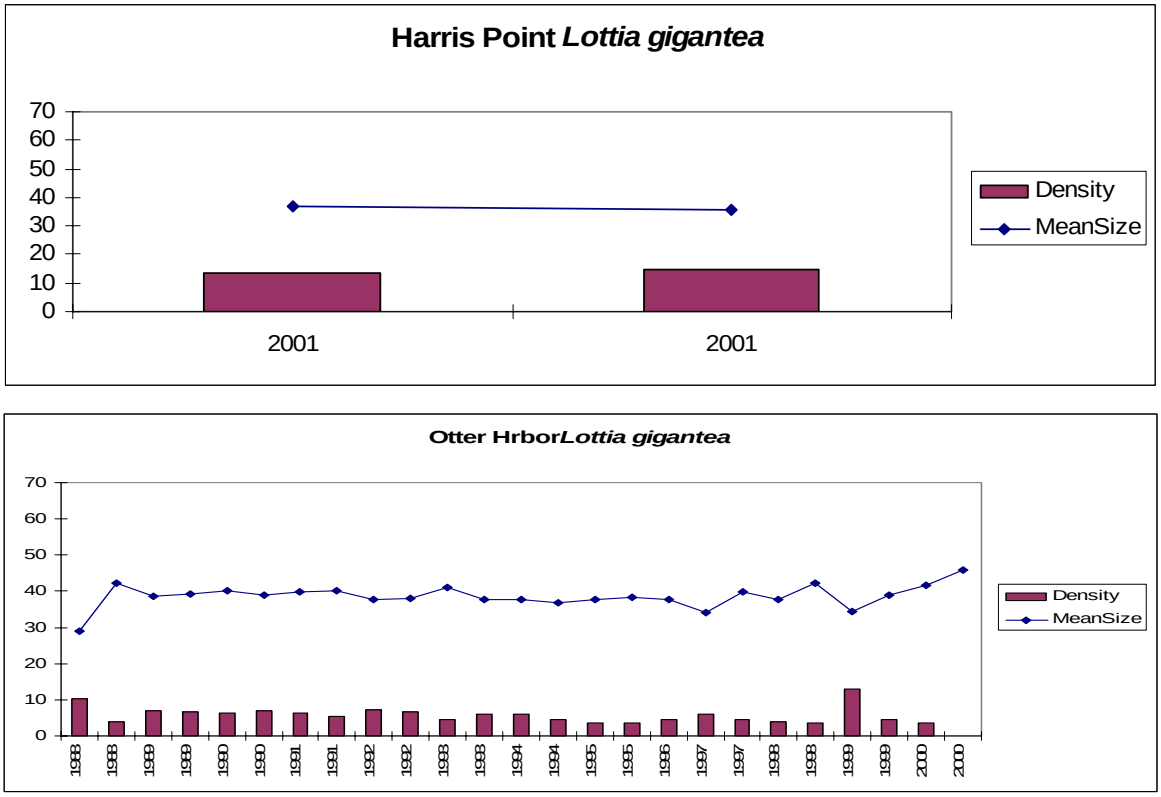


Figure 7. ***Lottia gigantea*** **size (mm) and density (#/m2) at San Miguel Island.**

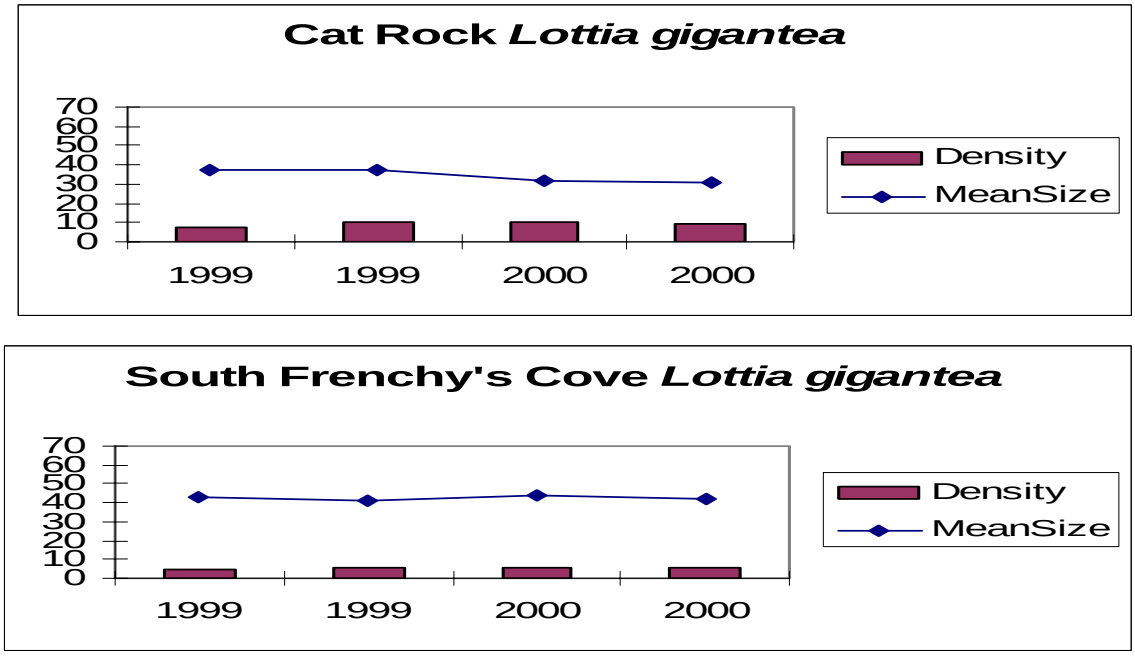


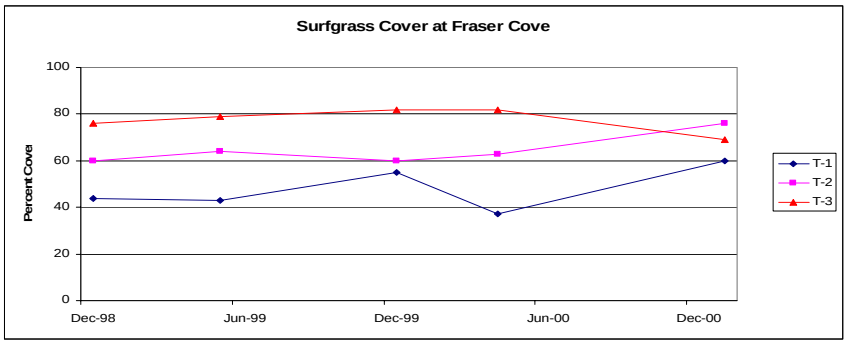
Figure 8. ***Lottia gigantea*** **size (mm) and density (#/m2) at Anacapa Island**

Table 4. ***Lottia gigantea* density and sizes pooled by island.** (San Miguel includes Harris Point counts in 30 minute search in spring)

Island Code	Year	Season	Plot Count	Area	Density (#/m^2)	Count Sized	Mean Size (mm)	StDev	Min Size	Max Size
AN	2000	1	151	18.85	8.012	151	35.97	12.06	15	64
AN	2000	3	141	18.85	7.482	141	35.13	12.16	15	59
SC	2000	1	292	47.12	6.198	292	43.07	18.49	15	88
SC	2000	3	321	47.12	6.813	321	40.00	19.41	15	89
SR	2000	1	548	62.82	8.723	548	55.27	18.76	16	98
SR	2000	3	668	62.82	10.634	668	51.54	19.60	15	99
SM	2000	1	96	26.50	3.623	201	44.88	13.87	17	82
SM	2000	3	55	26.50	2.075	55	45.89	15.14	24	81

Phyllospadix spp.

Only two sites (Trailer and Fraser Cove) had *Phyllospadix* spp., surfgrass, transects in 2000. Though there was a bit of difference between *Phyllospadix* cover in individual transects, especially at Fraser Cove, each of the transects have been fairly stable since 1998. Complete results from 2000 are presented in trip reports in Appendix B. For both sites, there was considerably more variation in the spring sample (37-82% *Phyllospadix* spp. cover at Fraser Cove and 62-78% cover at Trailer) than in the fall (60-76% cover and 79-84% cover respective).



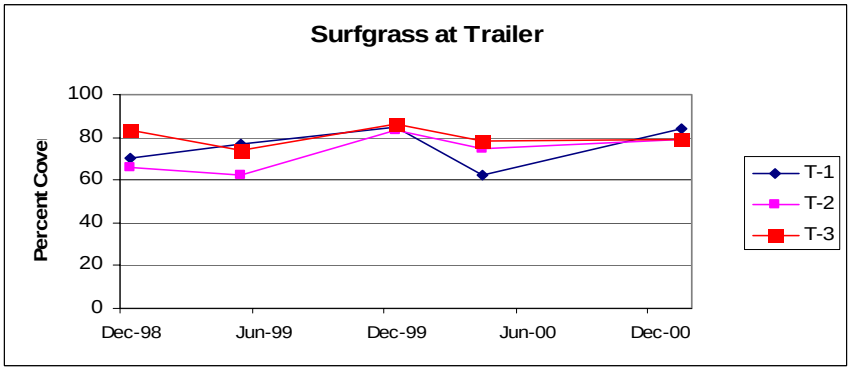


Figure 9. *Phyllospadix* spp. cover in transects at Santa Cruz Island.

Shorebirds and Pinnipeds

A summary of the shorebirds and pinnipeds observed on monitoring dates is presented in Table 5. Further natural history notes including birds observed off-site can be found in the trip reports section (Appx B). Black oystercatchers, *Haematopus bachmani*, were the most common shorebird and were observed at all but two sites in 2000. Hybrid oystercatchers with white bellies and all black upper parts were seen at Trailer and Fraser Cove. Large aggregations of 16 and 18 oystercatchers were observed at Northwest Talcott and Fraser Cove respectively on one visit but interestingly both sites had no shorebirds on the other visit in 2000. Other shorebirds included black turnstones, *Arenaria melanocephala*, willets, *Cataptrophorus semipalmatus*, wandering tattler, *Heteroscelus incanus*, ruddy turnstones, *Arenaria interpres* , and western sandpipers, *Calidris mauri*. Several sites, most notably East Point, Fossil Reef, and Crook Point, are used as roosting areas by western gulls, *Larus occidentalis*, various cormorants, *Phalacrocorax* spp., and brown pelicans, *Pelicanus occidentalis*. Those three sites have a prominent headland or reef that that extends well out to sea. Near Northwest Talcott, there is a promontory that usually has many seabirds and occasionally shorebirds, but we do not usually do a count there as it is some distance form the site. Rarely, a surf scoter, *Melanitta perspicullata,* will utilize a beach for resting as we saw at Frenchy's Cove.

Pinnipeds are most commonly seen at Otter Harbor, and Crook Point where the adjacent beaches attract elephant seals and harbor seals most of the year. The counts at these two sites include the adjacent beaches for elephant seals, *Mirounga angustirostris*. The elephant seal recorded at Northwest-Talcott was on one of the approach beaches to the site and not at the monitoring reef. Harbor seals, *Phoca vitulina,* are seen at many sites utilizing the rocky benches or calm beaches to haul out and rest. California sea lions, *Zalophus californianus*, are generally very common and more abundant at Landing Cove but only eight were seen in 2000. The large swell during our visit probably drove them to seek refuge in other areas.

Table 5. **Shorebirds and pinnipeds at monitoring sites in 2000**. (Maximum number seen at any one time)

site	season	Oystercatchers	Gulls	Cormorants	Black Turnstones	others	California Sea Lion	Elephant Seal	Harbor Seal
SBLC	Fall	2	1		2		8		
ANSFC	spring	3	1			1 Surf Scoter			
ANSFC	Fall	1							
ANCR	spring	1	8						3
ANCR	Fall	2				1 Wandering Tattler			
ANM-	spring	3	present						4
ANM-	Fall								
SCSR	spring	2	50			1 pelican			
SCSR	Fall		50						
SCPH	spring								1
SCPH	Fall		1						1
SCOC	spring	2							2
SCOC	Fall								
SCFC	spring	18	2			1 Belted Kingfisher/ 1 Willet		1	1
SCFC	Fall	4	4						
SCTR	spring	3	1						
SCTR	Fall	5							
SCWA	spring	2	26			1 Common Raven			
SCWA	Fall	2							1
SREP	spring	3	80	95		15 pelican			
SREP	Fall	3				1 Western Sandpiper			
SRFP	spring								
SRFP	Fall					2 Western Sandpipers			
SRJL	spring	2							
SRJL	Fall		22		2	1 Ruddy Turnstone			
SRFR	spring	7	5						
SRFR	Fall	6	3	35	1	2 pelican			
SRNWT	spring		4				1	1	7
SRNWT	Fall	16	2						
SMCH	spring	2							
SMCH	Fall	1							
SMHP	spring	1							
SMHP	Fall	5							1
SMOH	spring	2	present					25	21
SMOH	Fall	2						62	32
SMCP	spring	2	3	1				24	
SMCP	Fall			6					

Visitation monitoring

Visitation numbers for Frenchy's Cove are available from monthly reports based on concessionaire reporting from Island Packers Company and Truth Aquatics (Table 6). No records are available for the number of private boaters actually going ashore there.

The total visitation from concession boats in 2000 was only 2272 (table 6) which was slightly less than the 2401 visitors in 1999. March was once again the top month for visitation with 978 passengers on 18 trips. March saw more than three times the visitors than any other month. Visitation by the concession boats was spread throughout the year with only September not reporting any visitors (Figure 10). Two people from a small sailboat were observed camping at the beach at Frenchy's Cove in May after apparently aborting their trip to Scorpion Cove on Santa Cruz because of bad weather.

Table 6. Visitors to Frenchy's Cove, Anacapa Island in 2000. (Concession boat figures)

YEAR	*MONTH*	*#PASSENGERS*	*#TRIPS*	*Pass/trip*
2000	January	195	5	39
2000	February	78	2	39
2000	March	978	18	54
2000	April	137	3	46
2000	May	119	2	60
2000	June	65	1	65
2000	July	230	4	58
2000	August	315	5	63
2000	September	0	0	0
2000	October	68	2	34
2000	November	50	2	25
2000	December	37	1	37
	Total	**2272**	**45**	**Avg.=43**

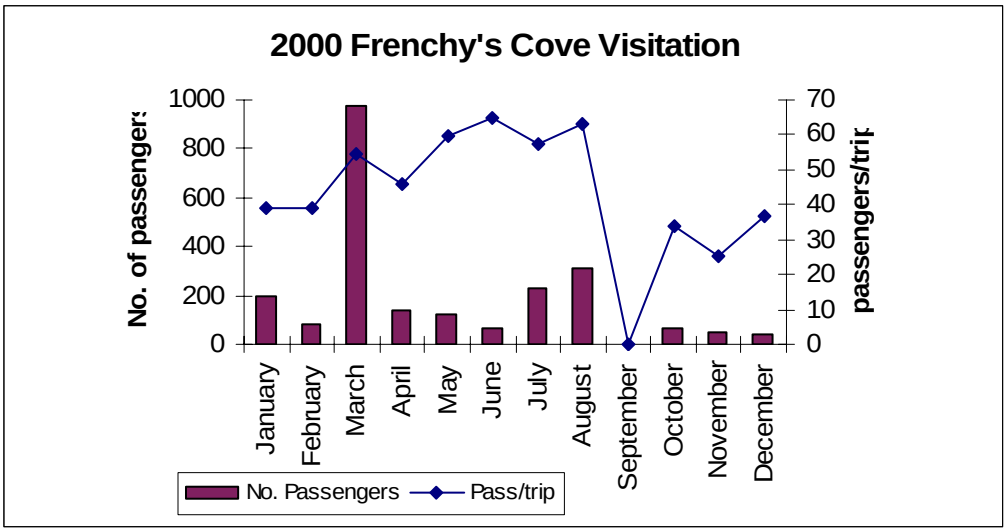


Figure 10. **Visitation at Frenchy's Cove, Anacapa Island by month in 2000**. Island Packers Company visitation figures only (see text).

Trip reports

Summaries of work performed, data collected, weather conditions, and natural history observations for each sampling event are presented in the individual trip reports in Appendix B. Explanations for missing or incomplete data are usually found there. Summary tables and figures in the trip reports present additional information on species monitored. Photoplot data tables use the past combinations of species in lumped categories used in previous reporting (most notable, *Hesperophycus* and *Silvetia* which were reported together as rockweed.

Species Diversity

Species surveys were done at most sites during the fall sampling period. These are presented in Appendix C. Effort on species was mostly minimal as our time was prioritized to scoring the plots and counting motile invertebrates, limpets and abalone. Lists were typically compiled from what we saw working in the photoplots with additions from a brief survey of the general area

Discussion

2000 seems to have been a typical year in that target species populations in the photoplots acted independently, often without any clear pattern and usually with no evident cause. For example, *Silvetia compressa* cover dropped to low levels in the rockweed zone over the last five years at many sites. Healthy plants were present however, so it wasn't likely a general decline in the health of *S. compressa*. The *S. compressa* cover was often higher in the *Endocladia* zone plots indicating that there may have been a slight shift in the zonation rather than overall decline in those cases. *Silvetia compressa* was doing very well, increasing cover at some sites (e.g., East Point, Northwest-Talcott, and Cuyler Harbor), while at others it was present at very low levels where it had once been common (e.g., Orizaba Cove, Fossil Reef, and Landing Cove).

A more understandable pattern of population variability was seen in Acorn barnacle (*Chthamalus* spp. and *Balanus glandula*) cover where the colder San Miguel and Santa Rosa Islands saw high recruitment while Santa Barbara, Anacapa, and Santa Cruz barnacles did not do as well.

Mussels (mostly *Mytilus californianus*) tend to live several years on average and variability between seasons and years tends to be low. Occasionally damage will occur to one or more plots and over time (months to years depending on the severity of the damage) the mussels will recover. Mussels at Johnson's Lee and Fossil Reef were predated by *Pisaster ochraceus* and the populations have remained at low levels with the continued presence of the seastars.

The motile invertebrate protocol needs to be clarified with a standard for sub-sampling. We have been working with the Multi-Agency Rocky Intertidal Network (MARINe) to achieve this (Dunaway *et al.* 1997). The group has also suggested a protocol for measuring some of the important common snails which will provide a better understanding of the population dynamics of those organisms. 2000 was the first concerted effort at standardized monitoring of motile invertebrates. The counts are intriguing and show promise for providing insight into the dynamics of the photoplots, though further analysis is needed.

At most sites we were not able to devote much time to noting species diversity. Typically we spend less than 30 minutes of general searching beyond the work done in the plots. Since we don't generally have time to bring specimens back for positive identification we are limited to species we can identify in the field or place in higher taxonomic categories. Over the years, however, we have built up a fair base of what we might expect to see at each site. Future effort should emphasize more quantifiable data such as motile invertebrate counts with reduced effort on the species list. A thorough species diversity effort approximately every three to five years should suffice. The general search effort is still important for early detection of alien species. To effectively search for aliens we will need to recognize those species most likely to invade our area, and have a system for collection and identification of unknowns. Close association with other monitoring groups such as the MARINe network will be important in exchanging information about new invasive species seen in other areas and, to learn about them in taxonomy workshops.

Oystercatchers are important predators on mussels, limpets, chitons, barnacles, worms, and assorted crustaceans (Baird 1993). We have observed oystercatchers at every site, though in 2000 we did not record them at two of the sites (Scorpion Rock and Ford Point) on either visit. I have also observed them probing sandy beaches adjacent to rocky reefs for sand crabs, *Emerita analoga*. We occasionally find fresh limpet or chiton shells that were the apparent victims of oystercatchers but never any broad scale evidence of depletion of these organisms. Other shorebirds are occasionally common at some monitoring sites but were not frequently observed in 2000. Various seabirds such as western gulls, cormorants, and western brown pelicans regularly use the reefs at East Point, Fossil Reef, and Crook Point as roosting areas. Western gulls were observed nesting in the iceplant above the monitoring site at Otter Harbor for the first time. The island fox population has been declining and their absence may be what allowed the gulls to occupy this bluff where we typically used to see foxes foraging. Western gulls occasionally forage in the intertidal zone, but so did foxes. Seabirds occasionally deposit considerable quantities of guano on parts of the reef. This nitrogen source may add to the growth of algae in the intertidal zone but it may also be toxic to some invertebrates if the levels are too high (particularly in the high intertidal).

Pinnipeds may also deposit large quantities of nutrients to the rocky intertidal in their feces and urine. Sea lions drag themselves across the rocky reef to lounge well above

the tide line and have varying impacts on the intertidal algae and invertebrates. Harbor seals are typically seen at many of the sites, though they were most numerous and almost always present at Otter Harbor. I have not observed trampling impacts from harbor seals or elephant seals. Elephant seals were commonly seen at Crook Point, Otter Harbor, and Fossil Reef, though they generally prefer sandy beaches and are most numerous next to the rocky reef, rarely impacting the plots.

Sea temperature in 2000 was slightly cooler than the twenty year average. The monthly running means for 2000 were 0.5-1.5°C below the Oceanic Niño Index (NOAA Climate Prediction Center). Subtidal temperatures for all the CINP kelp forest monitoring sites put 2000 in the normal to cool range with a yearly mean from all sites at 14.6°C compared to 14.1°C in 1999 and 14.5°C in 2001. The 1999 low followed the two exceptionally warm 1997-1998 El Niño when the yearly means were 16°C and 15.5°C (CINP kelp forest monitoring data).

High sand deposition at Santa Rosa in fall 2000 may be an indication of calm conditions. In fall 2000, the tidepool and back cobble area at Johnson's Lee was completely covered by sand. This was the most sand I have ever observed there. Other sites had some sand deposition but nothing comparable to Johnson's Lee.

Disease has played a significant role in the Channel Islands marine community during the last two decades with several echinoderm species and black abalone being impacted (Lafferty and Kuris 1993, Lafferty and Kushner 1999, Eckert et al. 1999 Friedman et al. 2000). Two incidents of disease were noted in 2000. *Strongylocentrotus purpuratus* (purple sea urchins) with wasting disease were found at East Point in December. This disease was first noticed in subtidal populations in 1992 (Richards and Kushner 1994). Only one *Haliotis cracherodii* was found that exhibited Withering Syndrome, a symptom of bacterial infection that often leads to death of the abalone.

Site mapping with Geographic Positioning System (GPS) was completed at Anacapa in 2000, completing the initial mapping of all the intertidal monitoring sites. This only completes the field mapping and much post-processing remains to be done as time and expertise become available. The aim of these maps is to give a more accurate map to ease locating individual plots.

Conclusions

There were no significant trends or abnormalities in 2000. The monitoring has shown that recruitment of organisms may not occur evenly over the range of islands (e.g. *Balanus/Chthamalus*) or even at one island (e.g. *Silvetia compressa*). Also, recovery may take a long time, as in the black abalone. We were reminded that the vagaries of weather and transportation may mean that we can't always visit every site every time. The number of sites in the program means we do not have many options for repeat trips when conditions might be more favorable. Thus, gaps in data collection are bound to occur. This emphasizes the importance of striving for biannual monitoring as a way of reducing those gaps in data. More frequent data collection also insures that in the event of an oil spill or other major disturbance, we will have an accurate pre-event record of plant and animal life for comparison purposes.

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Appendix A. Photoquadrat Data

Percent cover of selected taxa in fixed 50 x 75 cm photoquadrats based on 100 points per plot. Target taxa are presented in the tables for each site and each sampling (spring and fall). Acorn barnacle taxon includes *Balanus glandula* and *Chthamalus fissus/dalli*. *Pollicipes polymerus* is listed as leaf barnacle. Turf-weed taxon is only used at Landing Cove Santa Barbara Island and includes *Chondracanthus (Gigartina) canaliculatus, Gelidium* sp. and *Pterocladiella capillacea*. The mussel taxon is primarily *Mytilus* spp. with Mytilus californianus dominating at all sites. Misc. Algae and Misc. animals may include a variety of different species. In the past these species have not been identified, however we are beginning to note the species and add them to the database. Species identified in 2000 may be identified in the database but are lumped here for convenience. Bare Rock is just that, however we had no way to detect the presence of Cyanobacteria. The other category is a “catch-all” category and in 2000 was mostly used for *Phyllospadix* spp.

Percent Cover of Index Species

Cat Rock, Anacapa Island - Spring 2000 (6/6/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	31	29	39	0	12	18	0	0	0	1	0	1	0	100
	32	25	9	0	28	36	2	0	0	0	0	0	0	100
	33	7	2	0	4	87	0	0	0	0	0	0	0	100
	35	15	24	0	4	55	0	0	0	2	0	0	0	100
	36	6	1	0	2	90	0	0	0	1	0	0	0	100
	37	15	6	0	14	49	16	0	0	0	0	0	0	100
	38	43	37	0	5	0	0	0	0	15	0	0	0	100
	39	30	22	0	3	45	0	0	0	0	0	0	0	100
	135	10	1	0	5	79	5	0	0	0	0	0	0	100
	Mean	**20.00**	**15.67**	**.00**	**8.56**	**51.00**	**2.56**	**.00**	**.00**	**2.11**	**.00**	**.11**	**.00**	**100.00**
	StDev	**12.50**	**15.26**	**.00**	**8.37**	**30.77**	**5.32**	**.00**	**.00**	**4.88**	**.00**	**.33**	**.00**	**.00**
Endocladia	13	23	9	5	55	0	0	0	0	7	1	0	0	100
	14	43	8	10	21	0	0	2	0	15	1	0	0	100
	19	13	1	0	21	50	11	0	0	4	0	0	0	100
	51	16	3	4	17	0	0	0	0	60	0	0	0	100
	52	18	1	11	45	0	0	4	0	21	0	0	0	100
	54	20	5	14	37	0	0	0	0	24	0	0	0	100
	212	19	8	4	58	0	4	0	0	7	0	0	0	100
	467	22	4	17	41	0	0	0	0	16	0	0	0	100
	492	30	8	7	37	5	10	0	0	3	0	0	0	100
	Mean	**22.67**	**5.22**	**8.00**	**36.89**	**6.11**	**2.78**	**.67**	**.00**	**17.44**	**.22**	**.00**	**.00**	**100.00**
	StDev	**9.00**	**3.15**	**5.43**	**14.82**	**16.54**	**4.58**	**1.41**	**.00**	**17.61**	**.44**	**.00**	**.00**	**.00**
Rockweed	2	14	8	0	17	27	29	0	0	5	0	0	0	100
	3	6	1	0	1	89	3	0	0	0	0	0	0	100
	4	5	0	0	8	39	47	0	0	1	0	0	0	100
	5	28	11	6	24	9	18	0	0	3	0	1	0	100
	6	6	0	0	9	29	52	0	0	4	0	0	0	100
	8	7	1	0	1	17	74	0	0	0	0	0	0	100
	9	6	1	0	5	11	76	0	0	1	0	0	0	100
	10	3	0	0	0	37	59	0	0	1	0	0	0	100
	55	33	27	9	20	0	0	1	0	10	0	0	0	100
	Mean	**12.00**	**5.44**	**1.67**	**9.44**	**28.67**	**39.78**	**.11**	**.00**	**2.78**	**.00**	**.11**	**.00**	**100.00**
	StDev	**10.98**	**9.02**	**3.39**	**8.90**	**26.16**	**28.68**	**.33**	**.00**	**3.23**	**.00**	**.33**	**.00**	**.00**

Percent Cover of Index Species

Cat Rock, Anacapa Island - Spring 2000 (6/6/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Mussels	56	40	4	15	0	0	0	24	1	14	2	0	0	100
	164	21	2	18	6	0	0	33	0	20	0	0	0	100
	203	18	6	12	5	0	0	44	0	12	3	0	0	100
	204	11	3	10	9	0	0	52	0	15	0	0	0	100
	468	29	9	16	1	0	0	16	0	29	0	0	0	100
	470	55	8	10	3	0	0	12	1	10	1	0	0	100
	471	47	2	10	8	0	0	14	0	19	0	0	0	100
	472	14	1	11	0	0	0	53	4	17	0	0	0	100
	473	37	3	9	1	0	0	36	0	14	0	0	0	100
	Mean	**30.22**	**4.22**	**12.33**	**3.67**	**.00**	**.00**	**31.56**	**.67**	**16.67**	**.67**	**.00**	**.00**	**100.00**
	StDev	**15.43**	**2.82**	**3.20**	**3.46**	**.00**	**.00**	**15.99**	**1.32**	**5.61**	**1.12**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Middle-West, Anacapa Island - Spring 2000 (5/5/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	447	22	28	0	47	0	0	0	0	2	1	0	0	100
	448	15	15	1	33	0	0	1	1	34	0	0	0	100
	449	11	11	0	12	0	0	0	0	66	0	0	0	100
	450	28	9	0	21	10	0	0	0	32	0	0	0	100
	451	27	20	1	33	0	0	0	0	18	1	0	0	100
	Mean	**20.60**	**16.60**	**.40**	**29.20**	**2.00**	**.00**	**.20**	**.20**	**30.40**	**.40**	**.00**	**.00**	**100.00**
	StDev	**7.44**	**7.64**	**.55**	**13.31**	**4.47**	**.00**	**.45**	**.45**	**23.68**	**.55**	**.00**	**.00**	**.00**
Endocladia	457	14	0	5	29	0	0	12	0	38	2	0	0	100
	458	38	3	23	12	0	0	4	2	16	2	0	0	100
	459	43	0	0	27	0	0	4	0	25	1	0	0	100
	460	21	16	2	54	0	0	0	0	7	0	0	0	100
	461	17	0	0	66	8	0	0	0	9	0	0	0	100
	Mean	**26.60**	**3.80**	**6.00**	**37.60**	**1.60**	**.00**	**4.00**	**.40**	**19.00**	**1.00**	**.00**	**.00**	**100.00**
	StDev	**13.05**	**6.94**	**9.72**	**21.89**	**3.58**	**.00**	**4.90**	**.89**	**12.75**	**1.00**	**.00**	**.00**	**.00**
Rockweed	452	20	3	5	10	0	58	0	0	4	0	0	0	100
	453	8	1	0	4	0	81	0	0	6	0	0	0	100
	454	36	0	8	8	0	0	3	0	38	7	0	0	100
	455	8	0	0	8	0	64	3	0	11	6	0	0	100
	456	17	0	0	1	0	60	4	2	16	0	0	0	100
	Mean	**17.80**	**.80**	**2.60**	**6.20**	**.00**	**52.60**	**2.00**	**.40**	**15.00**	**2.60**	**.00**	**.00**	**100.00**
	StDev	**11.50**	**1.30**	**3.71**	**3.63**	**.00**	**30.77**	**1.87**	**.89**	**13.67**	**3.58**	**.00**	**.00**	**.00**
Mussels	462	22	1	6	4	0	0	52	2	13	0	0	0	100
	463	24	0	8	3	0	0	31	1	32	1	0	0	100
	464	14	1	7	0	0	0	70	2	5	1	0	0	100
	465	24	0	1	0	0	0	66	1	7	1	0	0	100
	466	3	0	0	0	0	0	93	0	3	1	0	0	100
	Mean	**17.40**	**.40**	**4.40**	**1.40**	**.00**	**.00**	**62.40**	**1.20**	**12.00**	**.80**	**.00**	**.00**	**100.00**
	StDev	**9.04**	**.55**	**3.65**	**1.95**	**.00**	**.00**	**22.92**	**.84**	**11.79**	**.45**	**.00**	**.00**	**.00**

Percent Cover of Index Species

S Frenchy's Cove, Anacapa Island - Spring 2000 (5/6/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	249	31	25	0	43	0	0	0	0	0	0	1	0	100
	250	36	22	0	37	0	0	0	0	4	0	1	0	100
	251	82	18	0	0	0	0	0	0	0	0	0	0	100
	252	73	17	0	4	0	0	0	0	6	0	0	0	100
	253	53	24	0	21	0	0	0	0	2	0	0	0	100
	Mean	**55.00**	**21.20**	**.00**	**21.00**	**.00**	**.00**	**.00**	**.00**	**2.40**	**.00**	**.40**	**.00**	**100.00**
	StDev	**22.33**	**3.56**	**.00**	**19.17**	**.00**	**.00**	**.00**	**.00**	**2.61**	**.00**	**.55**	**.00**	**.00**
Endocladia	154	22	3	0	69	0	0	0	0	6	0	0	0	100
	155	7	0	0	87	0	6	0	0	0	0	0	0	100
	256	22	0	0	48	25	0	0	0	5	0	0	0	100
	257	9	0	0	87	0	0	0	0	4	0	0	0	100
	258	7	0	0	40	0	52	0	0	1	0	0	0	100
	Mean	**13.40**	**.60**	**.00**	**66.20**	**5.00**	**11.60**	**.00**	**.00**	**3.20**	**.00**	**.00**	**.00**	**100.00**
	StDev	**7.89**	**1.34**	**.00**	**21.74**	**11.18**	**22.73**	**.00**	**.00**	**2.59**	**.00**	**.00**	**.00**	**.00**
Rockweed	259	3	0	0	0	0	97	0	0	0	0	0	0	100
	260	36	10	0	9	3	38	0	0	4	0	0	0	100
	261	3	0	0	1	0	95	0	0	1	0	0	0	100
	262	56	13	0	0	0	5	0	0	26	0	0	0	100
	263	7	0	0	1	0	90	0	0	2	0	0	0	100
	Mean	**21.00**	**4.60**	**.00**	**2.20**	**.60**	**65.00**	**.00**	**.00**	**6.60**	**.00**	**.00**	**.00**	**100.00**
	StDev	**23.95**	**6.39**	**.00**	**3.83**	**1.34**	**41.47**	**.00**	**.00**	**10.95**	**.00**	**.00**	**.00**	**.00**
Mussels	201	3	0	0	20	0	0	31	0	46	0	0	0	100
	202	8	2	1	4	0	0	47	2	36	0	0	0	100
	264	4	2	0	5	0	0	49	0	39	1	0	0	100
	265	21	0	3	2	0	0	47	0	27	0	0	0	100
	266	25	0	7	2	0	0	48	0	17	1	0	0	100
	Mean	**12.20**	**.80**	**2.20**	**6.60**	**.00**	**.00**	**44.40**	**.40**	**33.00**	**.40**	**.00**	**.00**	**100.00**
	StDev	**10.13**	**1.10**	**2.95**	**7.60**	**.00**	**.00**	**7.54**	**.89**	**11.25**	**.55**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Crook Point, San Miguel Island - Spring 2000 (6/5/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	137	70	29	0	0	0	0	0	0	0	1	0	0	100
	147	46	47	0	0	0	0	0	0	7	0	0	0	100
	148	49	51	0	0	0	0	0	0	0	0	0	0	100
	149	53	42	0	2	0	0	3	0	0	0	0	0	100
	495	31	64	0	4	0	0	1	0	0	0	0	0	100
	Mean	**49.80**	**46.60**	**.00**	**1.20**	**.00**	**.00**	**.80**	**.00**	**1.40**	**.20**	**.00**	**.00**	**100.00**
	StDev	**14.02**	**12.78**	**.00**	**1.79**	**.00**	**.00**	**1.30**	**.00**	**3.13**	**.45**	**.00**	**.00**	**.00**
Endocladia	386	39	21	0	35	2	0	0	0	1	2	0	0	100
	387	20	54	1	8	0	0	1	0	16	0	0	0	100
	388	24	29	0	46	0	0	0	0	1	0	0	0	100
	389	33	15	0	15	3	7	26	0	1	0	0	0	100
	390	41	10	0	15	0	0	10	4	18	2	0	0	100
	Mean	**31.40**	**25.80**	**.20**	**23.80**	**1.00**	**1.40**	**7.40**	**.80**	**7.40**	**.80**	**.00**	**.00**	**100.00**
	StDev	**9.18**	**17.28**	**.45**	**15.99**	**1.41**	**3.13**	**11.22**	**1.79**	**8.79**	**1.10**	**.00**	**.00**	**.00**
Rockweed	396	50	9	0	9	1	12	13	4	2	0	0	0	100
	397	9	4	0	0	0	0	42	0	45	0	0	0	100
	398	51	13	0	8	0	10	9	4	5	0	0	0	100
	399	36	22	0	0	0	0	1	0	41	0	0	0	100
	400	65	16	2	7	0	4	0	0	1	5	0	0	100
	Mean	**42.20**	**12.80**	**.40**	**4.80**	**.20**	**5.20**	**13.00**	**1.60**	**18.80**	**1.00**	**.00**	**.00**	**100.00**
	StDev	**21.21**	**6.83**	**.89**	**4.44**	**.45**	**5.59**	**17.10**	**2.19**	**22.19**	**2.24**	**.00**	**.00**	**.00**
Mussels	381	16	18	0	0	0	0	18	2	46	0	0	0	100
	382	1	1	0	0	0	0	98	0	0	0	0	0	100
	383	5	0	0	0	0	0	62	0	33	0	0	0	100
	384	6	4	0	0	0	0	73	4	12	1	0	0	100
	385	7	7	0	0	0	0	74	7	5	0	0	0	100
	Mean	**7.00**	**6.00**	**.00**	**.00**	**.00**	**.00**	**65.00**	**2.60**	**19.20**	**.20**	**.00**	**.00**	**100.00**
	StDev	**5.52**	**7.25**	**.00**	**.00**	**.00**	**.00**	**29.38**	**2.97**	**19.56**	**.45**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Cuyler Harbor, San Miguel Island - Spring 2000 (6/4/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	416	59	41	0	0	0	0	0	0	0	0	0	0	100
	417	49	50	0	1	0	0	0	0	0	0	0	0	100
	418	47	53	0	0	0	0	0	0	0	0	0	0	100
	419	69	24	0	7	0	0	0	0	0	0	0	0	100
	420	66	19	0	15	0	0	0	0	0	0	0	0	100
	Mean	**58.00**	**37.40**	**.00**	**4.60**	**.00**	**.00**	**.00**	**.00**	**.00**	**.00**	**.00**	**.00**	**100.00**
	StDev	**9.85**	**15.27**	**.00**	**6.50**	**.00**	**.00**	**.00**	**.00**	**.00**	**.00**	**.00**	**.00**	**.00**
Endocladia	411	53	1	0	22	0	0	11	0	12	1	0	0	100
	412	29	29	0	34	0	0	7	0	1	0	0	0	100
	413	29	0	0	21	0	44	1	0	5	0	0	0	100
	414	45	0	0	52	0	0	0	0	3	0	0	0	100
	415	42	0	0	55	0	0	0	0	3	0	0	0	100
	Mean	**39.60**	**6.00**	**.00**	**36.80**	**.00**	**8.80**	**3.80**	**.00**	**4.80**	**.20**	**.00**	**.00**	**100.00**
	StDev	**10.48**	**12.86**	**.00**	**16.12**	**.00**	**19.68**	**4.97**	**.00**	**4.27**	**.45**	**.00**	**.00**	**.00**
Rockweed	406	22	0	0	0	0	61	1	0	9	7	0	0	100
	407	5	0	0	0	0	92	0	0	3	0	0	0	100
	408	15	1	0	0	0	78	0	0	3	3	0	0	100
	409	16	0	0	0	0	84	0	0	0	0	0	0	100
	410	12	0	0	0	0	85	0	0	0	3	0	0	100
	Mean	**14.00**	**.20**	**.00**	**.00**	**.00**	**80.00**	**.20**	**.00**	**3.00**	**2.60**	**.00**	**.00**	**100.00**
	StDev	**6.20**	**.45**	**.00**	**.00**	**.00**	**11.73**	**.45**	**.00**	**3.67**	**2.88**	**.00**	**.00**	**.00**
Mussels	401	30	1	3	0	0	0	54	6	1	5	0	0	100
	402	8	1	0	0	0	0	88	2	0	1	0	0	100
	403	7	0	0	0	0	0	86	1	0	6	0	0	100
	404	36	2	10	0	0	0	37	1	0	14	0	0	100
	405	49	1	9	0	0	0	28	1	5	7	0	0	100
	Mean	**26.00**	**1.00**	**4.40**	**.00**	**.00**	**.00**	**58.60**	**2.20**	**1.20**	**6.60**	**.00**	**.00**	**100.00**
	StDev	**18.23**	**.71**	**4.83**	**.00**	**.00**	**.00**	**27.56**	**2.17**	**2.17**	**4.72**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Harris Point, San Miguel Island - Spring 2000 (6/7/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	436	30	31	18	1	0	0	10	0	9	1	0	0	100
	437	21	15	11	0	0	0	33	0	17	3	0	0	100
	438	27	3	0	1	0	0	0	0	69	0	0	0	100
	439	41	7	3	25	0	0	12	0	11	1	0	0	100
	440	47	53	0	0	0	0	0	0	0	0	0	0	100
	Mean	**33.20**	**21.80**	**6.40**	**5.40**	**.00**	**.00**	**11.00**	**.00**	**21.20**	**1.00**	**.00**	**.00**	**100.00**
	StDev	**10.59**	**20.47**	**7.89**	**10.97**	**.00**	**.00**	**13.49**	**.00**	**27.41**	**1.22**	**.00**	**.00**	**.00**
Endocladia	431	32	25	2	26	0	0	9	0	4	2	0	0	100
	432	3	8	0	88	0	0	0	0	1	0	0	0	100
	433	9	2	0	88	0	0	1	0	0	0	0	0	100
	434	34	3	0	54	0	7	0	0	2	0	0	0	100
	435	14	8	0	54	0	18	0	0	6	0	0	0	100
	Mean	**18.40**	**9.20**	**.40**	**62.00**	**.00**	**5.00**	**2.00**	**.00**	**2.60**	**.40**	**.00**	**.00**	**100.00**
	StDev	**13.90**	**9.26**	**.89**	**26.34**	**.00**	**7.87**	**3.94**	**.00**	**2.41**	**.89**	**.00**	**.00**	**.00**
Rockweed	421	19	5	0	17	58	0	0	0	1	0	0	0	100
	422	30	5	0	30	28	0	0	0	7	0	0	0	100
	423	14	2	0	55	28	0	0	0	1	0	0	0	100
	424	46	12	0	23	18	0	0	0	1	0	0	0	100
	425	27	9	0	7	55	0	0	0	2	0	0	0	100
	Mean	**27.20**	**6.60**	**.00**	**26.40**	**37.40**	**.00**	**.00**	**.00**	**2.40**	**.00**	**.00**	**.00**	**100.00**
	StDev	**12.28**	**3.91**	**.00**	**18.08**	**17.94**	**.00**	**.00**	**.00**	**2.61**	**.00**	**.00**	**.00**	**.00**
Mussels	426	24	3	2	2	0	0	57	5	6	1	0	0	100
	427	37	12	4	11	0	0	29	0	7	0	0	0	100
	428	50	12	0	3	0	0	33	0	2	0	0	0	100
	429	34	8	3	2	0	0	52	0	0	1	0	0	100
	430	19	4	3	2	0	0	69	0	3	0	0	0	100
	Mean	**32.80**	**7.80**	**2.40**	**4.00**	**.00**	**.00**	**48.00**	**1.00**	**3.60**	**.40**	**.00**	**.00**	**100.00**
	StDev	**12.07**	**4.27**	**1.52**	**3.94**	**.00**	**.00**	**16.76**	**2.24**	**2.88**	**.55**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Otter Harbor, San Miguel Island - Spring 2000 (6/6/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	370	29	10	0	0	0	0	0	0	61	0	0	0	100
	371	19	19	0	0	0	0	0	0	56	0	6	0	100
	372	50	49	0	0	0	0	0	0	0	1	0	0	100
	373	50	42	0	0	0	0	0	0	2	0	6	0	100
	374	11	8	0	0	0	0	0	0	81	0	0	0	100
	Mean	**31.80**	**25.60**	**.00**	**.00**	**.00**	**.00**	**.00**	**.00**	**40.00**	**.20**	**2.40**	**.00**	**100.00**
	StDev	**17.80**	**18.80**	**.00**	**.00**	**.00**	**.00**	**.00**	**.00**	**36.82**	**.45**	**3.29**	**.00**	**.00**
Endocladia	360	16	13	3	47	0	12	2	0	7	0	0	0	100
	361	15	0	0	59	0	21	0	0	5	0	0	0	100
	362	8	0	0	81	0	1	0	0	10	0	0	0	100
	363	2	1	0	50	0	39	0	0	8	0	0	0	100
	364	6	0	0	67	0	16	1	0	10	0	0	0	100
	Mean	**9.40**	**2.80**	**.60**	**60.80**	**.00**	**17.80**	**.60**	**.00**	**8.00**	**.00**	**.00**	**.00**	**100.00**
	StDev	**5.98**	**5.72**	**1.34**	**13.75**	**.00**	**13.95**	**.89**	**.00**	**2.12**	**.00**	**.00**	**.00**	**.00**
Rockweed	355	17	0	0	29	0	40	1	0	12	0	1	0	100
	356	3	1	1	21	0	68	0	0	6	0	0	0	100
	357	15	0	0	18	0	55	0	0	12	0	0	0	100
	358	30	3	0	31	0	23	0	0	11	1	1	0	100
	359	21	52	0	19	0	4	0	0	4	0	0	0	100
	Mean	**17.20**	**11.20**	**.20**	**23.60**	**.00**	**38.00**	**.20**	**.00**	**9.00**	**.20**	**.40**	**.00**	**100.00**
	StDev	**9.81**	**22.84**	**.45**	**5.98**	**.00**	**25.37**	**.45**	**.00**	**3.74**	**.45**	**.55**	**.00**	**.00**
Mussels	375	3	2	2	0	0	0	53	3	36	1	0	0	100
	376	12	2	0	0	0	0	48	0	35	3	0	0	100
	378	5	0	0	1	0	0	55	7	31	1	0	0	100
	379	6	3	0	0	0	0	51	6	34	0	0	0	100
	380	7	0	1	0	0	0	69	3	20	0	0	0	100
	Mean	**6.60**	**1.40**	**.60**	**.20**	**.00**	**.00**	**55.20**	**3.80**	**31.20**	**1.00**	**.00**	**.00**	**100.00**
	StDev	**3.36**	**1.34**	**.89**	**.45**	**.00**	**.00**	**8.14**	**2.77**	**6.53**	**1.22**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Fraser Cove, Santa Cruz Island - Spring 2000 (4/12/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	876	4	1	0	87	0	0	3	0	3	2	0	0	100
	877	15	2	0	62	0	0	1	0	20	0	0	0	100
	878	59	23	0	18	0	0	0	0	0	0	0	0	100
	879	39	26	0	31	0	0	0	0	0	2	2	0	100
	880	11	6	0	67	0	0	0	0	15	1	0	0	100
	Mean	**25.60**	**11.60**	**.00**	**53.00**	**.00**	**.00**	**.80**	**.00**	**7.60**	**1.00**	**.40**	**.00**	**100.00**
	StDev	**22.84**	**11.97**	**.00**	**28.03**	**.00**	**.00**	**1.30**	**.00**	**9.29**	**1.00**	**.89**	**.00**	**.00**
Endocladia	881	17	4	0	50	0	0	0	0	29	0	0	0	100
	882	13	9	0	73	0	0	0	0	4	1	0	0	100
	883	6	1	0	65	28	0	0	0	0	0	0	0	100
	884	3	1	0	96	0	0	0	0	0	0	0	0	100
	885	3	0	0	90	0	0	0	0	7	0	0	0	100
	Mean	**8.40**	**3.00**	**.00**	**74.80**	**5.60**	**.00**	**.00**	**.00**	**8.00**	**.20**	**.00**	**.00**	**100.00**
	StDev	**6.31**	**3.67**	**.00**	**18.67**	**12.52**	**.00**	**.00**	**.00**	**12.10**	**.45**	**.00**	**.00**	**.00**
Silvetia	896	9	0	0	29	2	58	0	0	2	0	0	0	100
	897	14	0	0	2	6	55	0	0	22	1	0	0	100
	898	6	0	0	0	0	88	0	0	6	0	0	0	100
	899	18	0	0	3	7	65	0	0	6	1	0	0	100
	900	7	0	0	2	12	78	0	0	1	0	0	0	100
	Mean	**10.80**	**.00**	**.00**	**7.20**	**5.40**	**68.80**	**.00**	**.00**	**7.40**	**.40**	**.00**	**.00**	**100.00**
	StDev	**5.07**	**.00**	**.00**	**12.24**	**4.67**	**13.92**	**.00**	**.00**	**8.47**	**.55**	**.00**	**.00**	**.00**
Mussels	891	15	0	0	0	0	0	46	0	27	12	0	0	100
	892	29	1	0	0	0	0	56	0	11	3	0	0	100
	893	10	0	0	0	0	0	75	2	5	8	0	0	100
	894	6	0	0	0	0	0	86	2	3	3	0	0	100
	895	7	0	0	0	0	0	80	7	3	3	0	0	100
	Mean	**13.40**	**.20**	**.00**	**.00**	**.00**	**.00**	**68.60**	**2.20**	**9.80**	**5.80**	**.00**	**.00**	**100.00**
	StDev	**9.40**	**.45**	**.00**	**.00**	**.00**	**.00**	**16.91**	**2.86**	**10.16**	**4.09**	**.00**	**.00**	**.00**
Pollicipes	901	20	11	4	3	0	0	40	6	13	3	0	0	100
	902	40	8	1	16	0	0	10	6	16	3	0	0	100
	903	7	0	0	0	0	0	52	16	5	20	0	0	100
	904	12	0	0	0	0	0	54	15	7	12	0	0	100
	905	3	0	0	0	0	0	50	22	9	16	0	0	100
	Mean	**16.40**	**3.80**	**1.00**	**3.80**	**.00**	**.00**	**41.20**	**13.00**	**10.00**	**10.80**	**.00**	**.00**	**100.00**
	StDev	**14.64**	**5.31**	**1.73**	**6.94**	**.00**	**.00**	**18.25**	**6.93**	**4.47**	**7.66**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Fraser Cove, Santa Cruz Island - Spring 2000 (4/12/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Tar	906	13	6	0	0	0	0	0	0	29	0	52	0	100
	907	27	12	0	0	0	0	0	0	33	0	28	0	100
	908	30	24	0	0	0	0	0	0	0	0	46	0	100
	909	47	11	0	0	0	0	0	0	5	0	37	0	100
	910	22	6	0	0	0	0	0	0	0	0	72	0	100
	Mean	**27.80**	**11.80**	**.00**	**.00**	**.00**	**.00**	**.00**	**.00**	**13.40**	**.00**	**47.00**	**.00**	**100.00**
	StDev	**12.52**	**7.36**	**.00**	**.00**	**.00**	**.00**	**.00**	**.00**	**16.26**	**.00**	**16.67**	**.00**	**.00**
Hesperophycus	886	71	2	0	4	12	0	0	0	11	0	0	0	100
	887	52	2	0	7	26	0	0	0	13	0	0	0	100
	888	28	11	0	23	36	0	0	2	0	0	0	0	100
	889	68	4	0	7	9	1	0	0	11	0	0	0	100
	890	21	4	0	11	45	15	0	0	4	0	0	0	100
	Mean	**48.00**	**4.60**	**.00**	**10.40**	**25.60**	**3.20**	**.00**	**.40**	**7.80**	**.00**	**.00**	**.00**	**100.00**
	StDev	**22.77**	**3.71**	**.00**	**7.47**	**15.37**	**6.61**	**.00**	**.89**	**5.54**	**.00**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Orizaba Cove, Santa Cruz Island - Spring 2000 (4/28/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	851	74	21	3	0	0	0	0	0	1	1	0	0	100
	852	34	62	0	0	0	0	0	0	3	1	0	0	100
	853	43	56	0	0	0	0	0	0	1	0	0	0	100
	854	49	35	7	0	0	0	1	0	8	0	0	0	100
	855	24	54	3	3	0	0	0	0	16	0	0	0	100
	Mean	**44.80**	**45.60**	**2.60**	**.60**	**.00**	**.00**	**.20**	**.00**	**5.80**	**.40**	**.00**	**.00**	**100.00**
	StDev	**18.86**	**17.07**	**2.88**	**1.34**	**.00**	**.00**	**.45**	**.00**	**6.38**	**.55**	**.00**	**.00**	**.00**
Silvetia	866	65	4	7	0	0	0	6	0	17	1	0	0	100
	867	60	7	3	0	0	13	1	0	16	0	0	0	100
	868	45	19	8	1	0	3	2	0	21	1	0	0	100
	869	53	13	7	0	0	7	0	0	18	2	0	0	100
	870	62	6	6	2	0	6	0	0	15	3	0	0	100
	Mean	**57.00**	**9.80**	**6.20**	**.60**	**.00**	**5.80**	**1.80**	**.00**	**17.40**	**1.40**	**.00**	**.00**	**100.00**
	StDev	**8.03**	**6.14**	**1.92**	**.89**	**.00**	**4.87**	**2.49**	**.00**	**2.30**	**1.14**	**.00**	**.00**	**.00**
Mussels	861	19	0	13	0	0	0	47	0	16	5	0	0	100
	862	2	1	3	0	0	0	92	0	2	0	0	0	100
	863	15	0	1	0	0	0	74	8	0	2	0	0	100
	864	22	0	2	0	0	0	64	6	6	0	0	0	100
	865	10	0	0	0	0	0	51	5	30	4	0	0	100
	Mean	**13.60**	**.20**	**3.80**	**.00**	**.00**	**.00**	**65.60**	**3.80**	**10.80**	**2.20**	**.00**	**.00**	**100.00**
	StDev	**7.89**	**.45**	**5.26**	**.00**	**.00**	**.00**	**18.23**	**3.63**	**12.38**	**2.28**	**.00**	**.00**	**.00**
Tetraclita	871	24	3	29	0	0	0	2	0	40	2	0	0	100
	872	36	6	35	0	0	0	10	0	7	6	0	0	100
	873	38	14	42	0	0	0	0	0	5	1	0	0	100
	874	43	9	37	0	0	0	3	2	3	3	0	0	100
	875	67	1	22	5	0	0	3	0	0	0	2	0	100
	Mean	**41.60**	**6.60**	**33.00**	**1.00**	**.00**	**.00**	**3.60**	**.40**	**11.00**	**2.40**	**.40**	**.00**	**100.00**
	StDev	**15.82**	**5.13**	**7.71**	**2.24**	**.00**	**.00**	**3.78**	**.89**	**16.42**	**2.30**	**.89**	**.00**	**.00**
Hesperophycus	856	34	7	1	46	3	0	1	0	7	1	0	0	100
	857	59	9	5	8	3	1	0	0	14	1	0	0	100
	858	56	2	1	4	6	3	0	0	23	5	0	0	100
	859	64	7	0	27	2	0	0	0	0	0	0	0	100
	860	64	5	0	29	0	0	0	0	2	0	0	0	100
	Mean	**55.40**	**6.00**	**1.40**	**22.80**	**2.80**	**.80**	**.20**	**.00**	**9.20**	**1.40**	**.00**	**.00**	**100.00**
	StDev	**12.44**	**2.65**	**2.07**	**17.08**	**2.17**	**1.30**	**.45**	**.00**	**9.42**	**2.07**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Prisoner's Harbor, Santa Cruz Island - Spring 2000 (4/10/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	826	100	0	0	0	0	0	0	0	0	0	0	0	100
	827	43	0	0	18	0	10	0	0	28	1	0	0	100
	828	12	1	0	0	0	82	0	0	4	1	0	0	100
	829	42	30	2	15	0	1	0	0	6	4	0	0	100
	830	59	24	0	6	0	1	0	0	10	0	0	0	100
	Mean	**51.20**	**11.00**	**.40**	**7.80**	**.00**	**18.80**	**.00**	**.00**	**9.60**	**1.20**	**.00**	**.00**	**100.00**
	StDev	**32.14**	**14.76**	**.89**	**8.38**	**.00**	**35.56**	**.00**	**.00**	**10.90**	**1.64**	**.00**	**.00**	**.00**
Endocladia	831	34	10	0	39	0	0	0	0	17	0	0	0	100
	832	17	17	0	58	3	0	0	0	3	2	0	0	100
	833	29	28	0	41	1	0	0	0	0	1	0	0	100
	834	16	21	0	56	2	0	0	0	4	1	0	0	100
	835	27	15	0	50	0	0	0	0	7	1	0	0	100
	Mean	**24.60**	**18.20**	**.00**	**48.80**	**1.20**	**.00**	**.00**	**.00**	**6.20**	**1.00**	**.00**	**.00**	**100.00**
	StDev	**7.83**	**6.76**	**.00**	**8.58**	**1.30**	**.00**	**.00**	**.00**	**6.53**	**.71**	**.00**	**.00**	**.00**
Silvetia	846	3	0	0	0	0	94	0	0	3	0	0	0	100
	847	4	0	0	0	0	81	1	0	14	0	0	0	100
	848	1	0	0	0	0	96	0	0	3	0	0	0	100
	849	0	0	0	0	0	93	0	0	6	1	0	0	100
	850	0	0	0	0	0	94	0	0	6	0	0	0	100
	Mean	**1.60**	**.00**	**.00**	**.00**	**.00**	**91.60**	**.20**	**.00**	**6.40**	**.20**	**.00**	**.00**	**100.00**
	StDev	**1.82**	**.00**	**.00**	**.00**	**.00**	**6.02**	**.45**	**.00**	**4.51**	**.45**	**.00**	**.00**	**.00**
Mussels	841	17	12	1	2	0	0	40	1	21	6	0	0	100
	842	6	0	0	0	0	0	81	0	8	5	0	0	100
	843	9	1	0	0	0	0	73	0	9	8	0	0	100
	844	5	0	0	0	0	0	70	0	21	4	0	0	100
	845	35	2	2	0	0	0	32	2	18	9	0	0	100
	Mean	**14.40**	**3.00**	**.60**	**.40**	**.00**	**.00**	**59.20**	**.60**	**15.40**	**6.40**	**.00**	**.00**	**100.00**
	StDev	**12.44**	**5.10**	**.89**	**.89**	**.00**	**.00**	**21.74**	**.89**	**6.43**	**2.07**	**.00**	**.00**	**.00**
Hesperophycus	836	28	8	0	40	19	0	0	0	4	1	0	0	100
	837	42	16	0	26	7	0	0	0	7	2	0	0	100
	838	41	4	0	18	19	0	0	0	18	0	0	0	100
	839	55	28	0	13	0	4	0	0	0	0	0	0	100
	840	37	30	0	32	0	0	0	0	0	1	0	0	100
	Mean	**40.60**	**17.20**	**.00**	**25.80**	**9.00**	**.80**	**.00**	**.00**	**5.80**	**.80**	**.00**	**.00**	**100.00**
	StDev	**9.76**	**11.63**	**.00**	**10.78**	**9.57**	**1.79**	**.00**	**.00**	**7.43**	**.84**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Scorpion Rock, Santa Cruz Island - Spring 2000 (4/27/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	801	42	18	2	37	0	0	0	0	1	0	0	0	100
	802	64	12	2	22	0	0	0	0	0	0	0	0	100
	803	70	13	1	14	0	0	0	0	2	0	0	0	100
	804	57	15	0	28	0	0	0	0	0	0	0	0	100
	805	70	29	0	0	0	0	0	0	1	0	0	0	100
	Mean	**60.60**	**17.40**	**1.00**	**20.20**	**.00**	**.00**	**.00**	**.00**	**.80**	**.00**	**.00**	**.00**	**100.00**
	StDev	**11.70**	**6.88**	**1.00**	**14.08**	**.00**	**.00**	**.00**	**.00**	**.84**	**.00**	**.00**	**.00**	**.00**
Endocladia	806	52	2	1	30	0	0	0	0	15	0	0	0	100
	807	32	9	3	15	0	0	3	0	37	1	0	0	100
	808	47	5	2	19	0	0	3	5	19	0	0	0	100
	809	43	24	0	24	0	0	0	1	6	2	0	0	100
	810	73	10	1	4	0	0	0	0	12	0	0	0	100
	Mean	**49.40**	**10.00**	**1.40**	**18.40**	**.00**	**.00**	**1.20**	**1.20**	**17.80**	**.60**	**.00**	**.00**	**100.00**
	StDev	**15.11**	**8.46**	**1.14**	**9.81**	**.00**	**.00**	**1.64**	**2.17**	**11.73**	**.89**	**.00**	**.00**	**.00**
Mussels	816	2	0	0	0	0	0	96	0	1	1	0	0	100
	817	28	0	1	0	0	0	63	0	3	5	0	0	100
	818	15	0	9	0	0	0	63	6	2	5	0	0	100
	819	13	0	1	0	0	0	73	5	6	2	0	0	100
	820	5	0	4	1	0	0	71	0	10	9	0	0	100
	Mean	**12.60**	**.00**	**3.00**	**.20**	**.00**	**.00**	**73.20**	**2.20**	**4.40**	**4.40**	**.00**	**.00**	**100.00**
	StDev	**10.16**	**.00**	**3.67**	**.45**	**.00**	**.00**	**13.54**	**3.03**	**3.65**	**3.13**	**.00**	**.00**	**.00**
Tetraclita	821	52	1	17	4	0	0	7	6	11	2	0	0	100
	822	44	0	4	10	0	0	25	0	14	3	0	0	100
	823	52	0	9	0	0	0	27	0	4	8	0	0	100
	824	51	0	17	0	0	0	24	0	3	5	0	0	100
	825	47	0	9	0	0	0	27	1	9	7	0	0	100
	Mean	**49.20**	**.20**	**11.20**	**2.80**	**.00**	**.00**	**22.00**	**1.40**	**8.20**	**5.00**	**.00**	**.00**	**100.00**
	StDev	**3.56**	**.45**	**5.67**	**4.38**	**.00**	**.00**	**8.49**	**2.61**	**4.66**	**2.55**	**.00**	**.00**	**.00**
Hesperophycus	811	25	1	0	28	41	0	0	0	5	0	0	0	100
	812	15	0	1	41	31	3	0	0	8	1	0	0	100
	813	7	0	0	23	30	35	0	0	5	0	0	0	100
	814	9	0	0	3	66	9	0	0	12	1	0	0	100
	815	21	0	0	35	30	1	0	0	13	0	0	0	100
	Mean	**15.40**	**.20**	**.20**	**26.00**	**39.60**	**9.60**	**.00**	**.00**	**8.60**	**.40**	**.00**	**.00**	**100.00**
	StDev	**7.67**	**.45**	**.45**	**14.56**	**15.47**	**14.62**	**.00**	**.00**	**3.78**	**.55**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Trailer, Santa Cruz Island - Spring 2000 (4/11/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	911	47	10	0	40	0	0	1	0	2	0	0	0	100
	912	71	24	0	0	0	0	0	0	2	3	0	0	100
	913	49	32	0	18	0	0	0	0	1	0	0	0	100
	914	77	21	0	0	0	0	0	0	0	2	0	0	100
	915	74	23	0	0	0	0	0	0	0	3	0	0	100
	Mean	**63.60**	**22.00**	**.00**	**11.60**	**.00**	**.00**	**.20**	**.00**	**1.00**	**1.60**	**.00**	**.00**	**100.00**
	StDev	**14.42**	**7.91**	**.00**	**17.69**	**.00**	**.00**	**.45**	**.00**	**1.00**	**1.52**	**.00**	**.00**	**.00**
Silvetia	926	4	0	0	0	0	84	0	0	11	1	0	0	100
	927	15	1	0	0	0	78	0	0	6	0	0	0	100
	928	25	0	0	2	0	71	0	0	2	0	0	0	100
	929	6	0	0	0	0	87	0	0	7	0	0	0	100
	930	5	0	0	0	0	93	0	0	2	0	0	0	100
	Mean	**11.00**	**.20**	**.00**	**.40**	**.00**	**82.60**	**.00**	**.00**	**5.60**	**.20**	**.00**	**.00**	**100.00**
	StDev	**8.97**	**.45**	**.00**	**.89**	**.00**	**8.44**	**.00**	**.00**	**3.78**	**.45**	**.00**	**.00**	**.00**
Mussels	921	8	2	0	0	0	0	73	1	7	9	0	0	100
	922	7	0	0	0	0	0	52	0	23	18	0	0	100
	923	11	1	0	0	0	0	52	0	22	14	0	0	100
	924	24	3	0	1	0	0	45	1	16	10	0	0	100
	925	25	3	0	2	0	0	49	0	9	12	0	0	100
	Mean	**15.00**	**1.80**	**.00**	**.60**	**.00**	**.00**	**54.20**	**.40**	**15.40**	**12.60**	**.00**	**.00**	**100.00**
	StDev	**8.80**	**1.30**	**.00**	**.89**	**.00**	**.00**	**10.89**	**.55**	**7.30**	**3.58**	**.00**	**.00**	**.00**
Hesperophycus	916	60	0	0	22	7	9	0	0	1	1	0	0	100
	917	38	0	0	18	9	33	0	0	2	0	0	0	100
	918	46	1	0	13	23	14	0	0	3	0	0	0	100
	919	40	4	0	5	28	20	0	0	3	0	0	0	100
	920	38	3	0	27	22	2	0	0	8	0	0	0	100
	Mean	**44.40**	**1.60**	**.00**	**17.00**	**17.80**	**15.60**	**.00**	**.00**	**3.40**	**.20**	**.00**	**.00**	**100.00**
	StDev	**9.32**	**1.82**	**.00**	**8.46**	**9.26**	**11.76**	**.00**	**.00**	**2.70**	**.45**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Willows Anchorage, Santa Cruz Island - Spring 2000 (4/13/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Endocladia	931	79	0	0	21	0	0	0	0	0	0	0	0	100
	932	62	0	0	38	0	0	0	0	0	0	0	0	100
	933	70	1	0	27	0	0	0	0	0	2	0	0	100
	934	74	2	0	21	0	0	0	0	0	3	0	0	100
	935	79	0	4	11	0	0	0	0	6	0	0	0	100
	Mean	**72.80**	**.60**	**.80**	**23.60**	**.00**	**.00**	**.00**	**.00**	**1.20**	**1.00**	**.00**	**.00**	**100.00**
	StDev	**7.12**	**.89**	**1.79**	**9.89**	**.00**	**.00**	**.00**	**.00**	**2.68**	**1.41**	**.00**	**.00**	**.00**
Silvetia	946	49	0	0	32	0	0	0	0	16	2	1	0	100
	947	66	0	0	17	0	0	0	0	17	0	0	0	100
	948	13	0	0	1	0	73	0	0	10	3	0	0	100
	949	5	0	0	0	0	89	0	0	5	1	0	0	100
	950	34	0	0	1	0	15	0	0	39	11	0	0	100
	Mean	**33.40**	**.00**	**.00**	**10.20**	**.00**	**35.40**	**.00**	**.00**	**17.40**	**3.40**	**.20**	**.00**	**100.00**
	StDev	**25.15**	**.00**	**.00**	**14.10**	**.00**	**42.45**	**.00**	**.00**	**13.01**	**4.39**	**.45**	**.00**	**.00**
Mussels	941	24	0	16	0	0	0	14	4	33	9	0	0	100
	942	19	0	1	0	0	0	38	10	25	7	0	0	100
	943	18	0	0	0	0	0	32	9	28	13	0	0	100
	944	16	0	0	0	0	0	27	20	28	9	0	0	100
	945	6	0	0	0	0	0	53	1	32	8	0	0	100
	Mean	**16.60**	**.00**	**3.40**	**.00**	**.00**	**.00**	**32.80**	**8.80**	**29.20**	**9.20**	**.00**	**.00**	**100.00**
	StDev	**6.62**	**.00**	**7.06**	**.00**	**.00**	**.00**	**14.34**	**7.26**	**3.27**	**2.28**	**.00**	**.00**	**.00**
Hesperophycus	936	94	1	0	0	0	0	0	0	1	4	0	0	100
	937	63	1	0	8	0	5	0	0	22	1	0	0	100
	938	92	1	0	0	1	0	0	0	6	0	0	0	100
	939	33	0	0	1	0	52	1	0	10	3	0	0	100
	940	52	0	0	11	14	13	0	0	9	1	0	0	100
	Mean	**66.80**	**.60**	**.00**	**4.00**	**3.00**	**14.00**	**.20**	**.00**	**9.60**	**1.80**	**.00**	**.00**	**100.00**
	StDev	**26.22**	**.55**	**.00**	**5.15**	**6.16**	**21.90**	**.45**	**.00**	**7.77**	**1.64**	**.00**	**.00**	**.00**

Percent Cover of Index Species

East Point, Santa Rosa Island - Spring 2000 (5/10/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	575	62	31	0	0	0	0	0	0	6	1	0	0	100
	576	24	19	0	29	25	0	0	0	3	0	0	0	100
	577	15	41	0	41	0	3	0	0	0	0	0	0	100
	578	83	17	0	0	0	0	0	0	0	0	0	0	100
	579	68	29	0	3	0	0	0	0	0	0	0	0	100
	Mean	**50.40**	**27.40**	**.00**	**14.60**	**5.00**	**.60**	**.00**	**.00**	**1.80**	**.20**	**.00**	**.00**	**100.00**
	StDev	**29.40**	**9.74**	**.00**	**19.14**	**11.18**	**1.34**	**.00**	**.00**	**2.68**	**.45**	**.00**	**.00**	**.00**
Endocladia	580	19	0	0	69	4	7	1	0	0	0	0	0	100
	581	25	4	0	66	5	0	0	0	0	0	0	0	100
	582	13	0	0	63	21	3	0	0	0	0	0	0	100
	583	21	1	0	68	8	2	0	0	0	0	0	0	100
	584	23	3	0	67	4	0	0	0	0	3	0	0	100
	Mean	**20.20**	**1.60**	**.00**	**66.60**	**8.40**	**2.40**	**.20**	**.00**	**.00**	**.60**	**.00**	**.00**	**100.00**
	StDev	**4.60**	**1.82**	**.00**	**2.30**	**7.23**	**2.88**	**.45**	**.00**	**.00**	**1.34**	**.00**	**.00**	**.00**
Rockweed	585	27	1	0	0	0	55	0	0	16	1	0	0	100
	586	32	1	0	0	0	45	0	0	17	5	0	0	100
	587	24	0	0	0	0	62	0	0	13	1	0	0	100
	588	11	4	0	0	0	57	1	0	24	3	0	0	100
	589	3	0	0	0	0	81	0	0	9	7	0	0	100
	Mean	**19.40**	**1.20**	**.00**	**.00**	**.00**	**60.00**	**.20**	**.00**	**15.80**	**3.40**	**.00**	**.00**	**100.00**
	StDev	**12.01**	**1.64**	**.00**	**.00**	**.00**	**13.27**	**.45**	**.00**	**5.54**	**2.61**	**.00**	**.00**	**.00**
Mussels	590	6	0	0	0	0	0	85	0	4	5	0	0	100
	591	4	5	0	0	0	0	64	0	10	17	0	0	100
	592	0	0	0	0	0	0	89	0	5	6	0	0	100
	593	2	0	0	0	0	0	91	0	1	6	0	0	100
	594	4	1	0	0	0	0	86	0	5	4	0	0	100
	Mean	**3.20**	**1.20**	**.00**	**.00**	**.00**	**.00**	**83.00**	**.00**	**5.00**	**7.60**	**.00**	**.00**	**100.00**
	StDev	**2.28**	**2.17**	**.00**	**.00**	**.00**	**.00**	**10.89**	**.00**	**3.24**	**5.32**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Ford Point, Santa Rosa Island - Spring 2000 (5/9/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	520	77	9	0	0	0	0	0	0	9	5	0	0	100
	521	81	17	0	0	0	0	0	0	0	2	0	0	100
	522	52	45	0	0	0	0	0	0	0	3	0	0	100
	523	31	40	0	29	0	0	0	0	0	0	0	0	100
	524	70	30	0	0	0	0	0	0	0	0	0	0	100
	Mean	**62.20**	**28.20**	**.00**	**5.80**	**.00**	**.00**	**.00**	**.00**	**1.80**	**2.00**	**.00**	**.00**	**100.00**
	StDev	**20.68**	**15.16**	**.00**	**12.97**	**.00**	**.00**	**.00**	**.00**	**4.02**	**2.12**	**.00**	**.00**	**.00**
Endocladia	525	18	4	0	72	0	0	0	0	6	0	0	0	100
	526	48	4	0	36	0	0	6	0	4	2	0	0	100
	527	36	2	0	34	0	0	9	0	17	2	0	0	100
	528	34	4	0	46	0	0	7	0	7	2	0	0	100
	529	26	2	0	67	0	0	3	0	2	0	0	0	100
	Mean	**32.40**	**3.20**	**.00**	**51.00**	**.00**	**.00**	**5.00**	**.00**	**7.20**	**1.20**	**.00**	**.00**	**100.00**
	StDev	**11.26**	**1.10**	**.00**	**17.58**	**.00**	**.00**	**3.54**	**.00**	**5.81**	**1.10**	**.00**	**.00**	**.00**
Mussels	530	53	2	0	0	0	0	14	0	28	3	0	0	100
	531	2	0	0	0	0	0	97	0	0	1	0	0	100
	532	3	0	0	0	0	0	97	0	0	0	0	0	100
	533	29	0	0	2	0	0	55	0	14	0	0	0	100
	534	15	0	0	0	0	0	16	3	49	17	0	0	100
	Mean	**20.40**	**.40**	**.00**	**.40**	**.00**	**.00**	**55.80**	**.60**	**18.20**	**4.20**	**.00**	**.00**	**100.00**
	StDev	**21.26**	**.89**	**.00**	**.89**	**.00**	**.00**	**41.01**	**1.34**	**20.77**	**7.26**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Fossil Reef, Santa Rosa Island - Spring 2000 (5/7/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	605	61	36	0	2	0	0	0	0	0	1	0	0	100
	606	56	38	0	0	0	0	0	0	0	0	6	0	100
	607	60	36	0	0	0	0	0	0	0	4	0	0	100
	608	76	22	0	0	0	0	0	0	0	2	0	0	100
	609	81	19	0	0	0	0	0	0	0	0	0	0	100
	Mean	**66.80**	**30.20**	**.00**	**.40**	**.00**	**.00**	**.00**	**.00**	**.00**	**1.40**	**1.20**	**.00**	**100.00**
	StDev	**10.99**	**8.96**	**.00**	**.89**	**.00**	**.00**	**.00**	**.00**	**.00**	**1.67**	**2.68**	**.00**	**.00**
Endocladia	610	51	44	0	4	0	0	0	0	1	0	0	0	100
	611	61	32	0	0	0	2	0	0	0	5	0	0	100
	612	19	0	0	0	0	77	0	0	2	2	0	0	100
	613	41	13	0	44	0	1	0	0	0	1	0	0	100
	614	17	0	0	0	0	79	0	0	4	0	0	0	100
	Mean	**37.80**	**17.80**	**.00**	**9.60**	**.00**	**31.80**	**.00**	**.00**	**1.40**	**1.60**	**.00**	**.00**	**100.00**
	StDev	**19.42**	**19.65**	**.00**	**19.31**	**.00**	**42.19**	**.00**	**.00**	**1.67**	**2.07**	**.00**	**.00**	**.00**
Rockweed	615	88	5	0	0	0	5	0	0	0	2	0	0	100
	616	75	15	0	0	0	5	0	0	1	4	0	0	100
	617	65	2	0	1	0	30	0	0	2	0	0	0	100
	618	69	9	0	12	0	2	0	0	5	3	0	0	100
	619	75	10	0	6	0	7	0	0	0	2	0	0	100
	Mean	**74.40**	**8.20**	**.00**	**3.80**	**.00**	**9.80**	**.00**	**.00**	**1.60**	**2.20**	**.00**	**.00**	**100.00**
	StDev	**8.71**	**4.97**	**.00**	**5.22**	**.00**	**11.43**	**.00**	**.00**	**2.07**	**1.48**	**.00**	**.00**	**.00**
Mussels	620	5	0	1	5	0	0	12	0	0	77	0	0	100
	621	11	0	7	0	0	0	23	0	31	28	0	0	100
	622	17	2	15	0	0	0	31	3	22	10	0	0	100
	623	24	0	9	0	0	0	26	10	26	5	0	0	100
	624	3	0	0	0	0	0	0	0	68	29	0	0	100
	Mean	**12.00**	**.40**	**6.40**	**1.00**	**.00**	**.00**	**18.40**	**2.60**	**29.40**	**29.80**	**.00**	**.00**	**100.00**
	StDev	**8.66**	**.89**	**6.15**	**2.24**	**.00**	**.00**	**12.42**	**4.34**	**24.61**	**28.46**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Johnson's Lee, Santa Rosa Island - Spring 2000 (5/9/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	500	50	49	0	0	0	0	0	0	1	0	0	0	100
	501	51	48	0	0	0	0	0	0	0	1	0	0	100
	502	79	21	0	0	0	0	0	0	0	0	0	0	100
	503	17	42	0	41	0	0	0	0	0	0	0	0	100
	504	38	59	1	0	0	0	0	0	0	2	0	0	100
	Mean	**47.00**	**43.80**	**.20**	**8.20**	**.00**	**.00**	**.00**	**.00**	**.20**	**.60**	**.00**	**.00**	**100.00**
	StDev	**22.53**	**14.13**	**.45**	**18.34**	**.00**	**.00**	**.00**	**.00**	**.45**	**.89**	**.00**	**.00**	**.00**
Endocladia	505	43	0	1	26	0	0	27	1	2	0	0	0	100
	506	48	4	1	46	0	0	1	0	0	0	0	0	100
	507	26	2	0	58	0	0	11	0	2	1	0	0	100
	508	28	4	0	52	0	0	12	1	0	3	0	0	100
	509	27	5	1	60	0	0	7	0	0	0	0	0	100
	Mean	**34.40**	**3.00**	**.60**	**48.40**	**.00**	**.00**	**11.60**	**.40**	**.80**	**.80**	**.00**	**.00**	**100.00**
	StDev	**10.31**	**2.00**	**.55**	**13.67**	**.00**	**.00**	**9.63**	**.55**	**1.10**	**1.30**	**.00**	**.00**	**.00**
Mussels	510	11	6	1	0	0	0	0	0	36	46	0	0	100
	511	9	0	0	0	0	0	12	0	15	64	0	0	100
	512	24	1	2	0	0	0	59	8	6	0	0	0	100
	513	16	0	3	0	0	0	16	0	25	40	0	0	100
	514	9	0	0	0	0	0	1	0	33	57	0	0	100
	Mean	**13.80**	**1.40**	**1.20**	**.00**	**.00**	**.00**	**17.60**	**1.60**	**23.00**	**41.40**	**.00**	**.00**	**100.00**
	StDev	**6.38**	**2.61**	**1.30**	**.00**	**.00**	**.00**	**24.15**	**3.58**	**12.51**	**24.96**	**.00**	**.00**	**.00**

Percent Cover of Index Species

NW Talcott, Santa Rosa Island - Spring 2000 (5/8/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	560	51	42	0	3	0	0	0	0	0	0	4	0	100
	561	55	37	0	5	0	2	0	0	0	0	1	0	100
	562	89	5	0	3	0	0	0	0	2	1	0	0	100
	563	32	4	0	2	0	61	0	0	0	1	0	0	100
	564	51	47	0	0	0	0	0	0	2	0	0	0	100
	Mean	**55.60**	**27.00**	**.00**	**2.60**	**.00**	**12.60**	**.00**	**.00**	**.80**	**.40**	**1.00**	**.00**	**100.00**
	StDev	**20.71**	**20.84**	**.00**	**1.82**	**.00**	**27.07**	**.00**	**.00**	**1.10**	**.55**	**1.73**	**.00**	**.00**
Endocladia	555	23	0	0	43	0	33	0	0	1	0	0	0	100
	556	78	3	0	10	0	3	0	0	6	0	0	0	100
	557	8	0	0	16	0	75	0	0	1	0	0	0	100
	558	15	24	0	53	0	0	0	0	8	0	0	0	100
	559	71	7	0	3	0	1	0	1	16	1	0	0	100
	Mean	**39.00**	**6.80**	**.00**	**25.00**	**.00**	**22.40**	**.00**	**.20**	**6.40**	**.20**	**.00**	**.00**	**100.00**
	StDev	**32.93**	**10.03**	**.00**	**21.78**	**.00**	**32.46**	**.00**	**.45**	**6.19**	**.45**	**.00**	**.00**	**.00**
Rockweed	565	20	0	0	0	0	72	0	0	8	0	0	0	100
	566	15	0	0	0	0	77	0	0	8	0	0	0	100
	567	10	0	0	0	0	83	0	0	2	5	0	0	100
	568	39	0	0	37	0	24	0	0	0	0	0	0	100
	569	76	0	0	1	0	22	0	0	1	0	0	0	100
	Mean	**32.00**	**.00**	**.00**	**7.60**	**.00**	**55.60**	**.00**	**.00**	**3.80**	**1.00**	**.00**	**.00**	**100.00**
	StDev	**26.94**	**.00**	**.00**	**16.44**	**.00**	**30.02**	**.00**	**.00**	**3.90**	**2.24**	**.00**	**.00**	**.00**
Mussels	550	13	3	0	0	0	0	61	10	10	3	0	0	100
	551	16	1	0	0	0	0	71	0	8	4	0	0	100
	552	24	0	0	0	0	0	59	8	7	2	0	0	100
	553	39	7	4	0	0	0	27	0	20	3	0	0	100
	554	24	2	1	0	0	0	44	8	14	7	0	0	100
	Mean	**23.20**	**2.60**	**1.00**	**.00**	**.00**	**.00**	**52.40**	**5.20**	**11.80**	**3.80**	**.00**	**.00**	**100.00**
	StDev	**10.08**	**2.70**	**1.73**	**.00**	**.00**	**.00**	**17.17**	**4.82**	**5.31**	**1.92**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Cat Rock, Anacapa Island - Fall 2000 (11/12/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	31	39	26	0	18	15	0	0	0	0	1	1	0	100
	32	7	6	0	27	58	2	0	0	0	0	0	0	100
	33	6	1	0	2	90	0	0	0	1	0	0	0	100
	35	20	8	0	0	72	0	0	0	0	0	0	0	100
	36	15	1	0	1	79	4	0	0	0	0	0	0	100
	37	9	5	0	4	67	15	0	0	0	0	0	0	100
	38	63	31	0	2	0	0	0	0	3	1	0	0	100
	39	18	21	0	3	58	0	0	0	0	0	0	0	100
	135	8	0	0	1	79	12	0	0	0	0	0	0	100
	Mean	**20.56**	**11.00**	**.00**	**6.44**	**57.56**	**3.67**	**.00**	**.00**	**.44**	**.22**	**.11**	**.00**	**100.00**
	StDev	**18.93**	**11.81**	**.00**	**9.45**	**30.40**	**5.79**	**.00**	**.00**	**1.01**	**.44**	**.33**	**.00**	**.00**
Endocladia	13	28	7	11	40	0	0	3	0	10	1	0	0	100
	14	31	3	14	31	0	0	2	0	13	6	0	0	100
	19	11	3	0	29	42	12	0	0	3	0	0	0	100
	51	75	0	3	11	0	0	0	0	7	4	0	0	100
	52	0	0	6	27	0	0	5	0	61	1	0	0	100
	54	8	1	10	14	0	0	0	0	67	0	0	0	100
	212	17	9	7	58	0	1	1	1	6	0	0	0	100
	467	16	3	16	32	0	0	3	0	24	6	0	0	100
	492	22	5	4	36	3	10	2	0	14	4	0	0	100
	Mean	**23.11**	**3.44**	**7.89**	**30.89**	**5.00**	**2.56**	**1.78**	**.11**	**22.78**	**2.44**	**.00**	**.00**	**100.00**
	StDev	**21.73**	**3.09**	**5.28**	**13.90**	**13.91**	**4.82**	**1.72**	**.33**	**24.18**	**2.55**	**.00**	**.00**	**.00**
Rockweed	2	33	8	0	9	15	32	0	0	3	0	0	0	100
	3	2	1	0	2	88	7	0	0	0	0	0	0	100
	4	10	1	0	3	30	56	0	0	0	0	0	0	100
	5	27	11	13	20	0	9	1	0	17	2	0	0	100
	6	3	0	0	3	24	67	0	0	3	0	0	0	100
	8	11	0	0	1	11	76	0	0	1	0	0	0	100
	9	1	1	0	7	6	84	0	0	1	0	0	0	100
	10	2	0	0	1	26	70	0	0	1	0	0	0	100
	55	36	28	10	14	0	0	1	0	11	0	0	0	100
	Mean	**13.89**	**5.56**	**2.56**	**6.67**	**22.22**	**44.56**	**.22**	**.00**	**4.11**	**.22**	**.00**	**.00**	**100.00**
	StDev	**14.22**	**9.32**	**5.13**	**6.61**	**27.00**	**32.87**	**.44**	**.00**	**5.90**	**.67**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Cat Rock, Anacapa Island - Fall 2000 (11/12/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Mussels	56	11	1	28	0	0	0	32	0	25	3	0	0	100
	164	8	4	16	0	0	0	46	1	21	4	0	0	100
	203	22	2	12	0	0	0	44	0	13	7	0	0	100
	204	4	2	11	0	0	0	61	2	19	1	0	0	100
	468	13	0	22	0	0	0	14	0	49	2	0	0	100
	470	32	2	25	2	0	0	0	2	36	1	0	0	100
	471	17	0	10	12	0	0	8	0	43	10	0	0	100
	472	6	0	15	0	0	0	57	2	20	0	0	0	100
	473	25	5	10	1	0	0	30	0	25	4	0	0	100
	Mean	**15.33**	**1.78**	**16.56**	**1.67**	**.00**	**.00**	**32.44**	**.78**	**27.89**	**3.56**	**.00**	**.00**	**100.00**
	StDev	**9.43**	**1.79**	**6.82**	**3.94**	**.00**	**.00**	**21.60**	**.97**	**12.08**	**3.21**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Middle-East, Anacapa Island - Fall 2000 (11/11/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	243	36	13	18	7	0	0	2	0	24	0	0	0	100
	244	44	9	4	29	1	0	1	0	12	0	0	0	100
	245	56	12	10	14	0	0	0	0	5	3	0	0	100
	Mean	**45.33**	**11.33**	**10.67**	**16.67**	**.33**	**.00**	**1.00**	**.00**	**13.67**	**1.00**	**.00**	**.00**	**100.00**
	StDev	**10.07**	**2.08**	**7.02**	**11.24**	**.58**	**.00**	**1.00**	**.00**	**9.61**	**1.73**	**.00**	**.00**	**.00**
Endocladia	240	28	4	1	37	2	15	0	0	13	0	0	0	100
	241	25	2	20	7	13	0	7	0	26	0	0	0	100
	242	38	1	1	36	14	0	0	0	10	0	0	0	100
	Mean	**30.33**	**2.33**	**7.33**	**26.67**	**9.67**	**5.00**	**2.33**	**.00**	**16.33**	**.00**	**.00**	**.00**	**100.00**
	StDev	**6.81**	**1.53**	**10.97**	**17.04**	**6.66**	**8.66**	**4.04**	**.00**	**8.50**	**.00**	**.00**	**.00**	**.00**
Rockweed	53	12	0	2	2	0	44	17	0	22	1	0	0	100
	237	5	0	0	1	3	86	0	0	5	0	0	0	100
	469	11	0	2	0	0	71	1	0	14	1	0	0	100
	Mean	**9.33**	**.00**	**1.33**	**1.00**	**1.00**	**67.00**	**6.00**	**.00**	**13.67**	**.67**	**.00**	**.00**	**100.00**
	StDev	**3.79**	**.00**	**1.15**	**1.00**	**1.73**	**21.28**	**9.54**	**.00**	**8.50**	**.58**	**.00**	**.00**	**.00**
Mussels	476	3	0	1	0	0	0	82	1	13	0	0	0	100
	477	6	0	3	0	0	0	87	0	4	0	0	0	100
	478	6	0	2	0	0	0	82	1	9	0	0	0	100
	Mean	**5.00**	**.00**	**2.00**	**.00**	**.00**	**.00**	**83.67**	**.67**	**8.67**	**.00**	**.00**	**.00**	**100.00**
	StDev	**1.73**	**.00**	**1.00**	**.00**	**.00**	**.00**	**2.89**	**.58**	**4.51**	**.00**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Middle-West, Anacapa Island - Fall 2000 (11/11/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	447	42	15	1	37	0	0	0	0	5	0	0	0	100
	448	29	10	2	25	0	0	9	0	25	0	0	0	100
	449	43	12	0	6	2	0	0	0	37	0	0	0	100
	450	52	10	0	6	14	0	0	0	18	0	0	0	100
	451	46	12	0	26	0	0	0	0	15	1	0	0	100
	Mean	**42.40**	**11.80**	**.60**	**20.00**	**3.20**	**.00**	**1.80**	**.00**	**20.00**	**.20**	**.00**	**.00**	**100.00**
	StDev	**8.44**	**2.05**	**.89**	**13.62**	**6.10**	**.00**	**4.02**	**.00**	**11.92**	**.45**	**.00**	**.00**	**.00**
Endocladia	457	35	1	0	19	0	0	7	0	37	1	0	0	100
	458	50	7	6	7	0	0	0	2	28	0	0	0	100
	459	50	5	0	11	0	0	2	0	30	2	0	0	100
	460	56	9	0	33	0	0	0	0	2	0	0	0	100
	461	50	1	0	37	12	0	0	0	0	0	0	0	100
	Mean	**48.20**	**4.60**	**1.20**	**21.40**	**2.40**	**.00**	**1.80**	**.40**	**19.40**	**.60**	**.00**	**.00**	**100.00**
	StDev	**7.82**	**3.58**	**2.68**	**13.22**	**5.37**	**.00**	**3.03**	**.89**	**17.14**	**.89**	**.00**	**.00**	**.00**
Rockweed	452	19	0	2	5	0	73	0	1	0	0	0	0	100
	453	9	0	0	2	0	86	0	0	3	0	0	0	100
	454	27	0	12	2	0	0	3	1	54	1	0	0	100
	455	3	0	0	3	0	80	2	0	10	2	0	0	100
	456	9	0	0	0	0	82	2	0	7	0	0	0	100
	Mean	**13.40**	**.00**	**2.80**	**2.40**	**.00**	**64.20**	**1.40**	**.40**	**14.80**	**.60**	**.00**	**.00**	**100.00**
	StDev	**9.53**	**.00**	**5.22**	**1.82**	**.00**	**36.20**	**1.34**	**.55**	**22.24**	**.89**	**.00**	**.00**	**.00**
Mussels	462	13	1	3	0	0	0	74	3	6	0	0	0	100
	463	21	0	3	0	0	0	40	0	32	4	0	0	100
	464	20	0	3	1	0	0	51	2	21	2	0	0	100
	465	20	0	4	0	0	0	68	0	8	0	0	0	100
	466	0	0	0	0	0	0	98	0	2	0	0	0	100
	Mean	**14.80**	**.20**	**2.60**	**.20**	**.00**	**.00**	**66.20**	**1.00**	**13.80**	**1.20**	**.00**	**.00**	**100.00**
	StDev	**8.87**	**.45**	**1.52**	**.45**	**.00**	**.00**	**22.32**	**1.41**	**12.42**	**1.79**	**.00**	**.00**	**.00**

Percent Cover of Index Species

S Frenchy's Cove, Anacapa Island - Fall 2000 (11/10/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	249	45	30	0	23	0	0	0	0	0	2	0	0	100
	250	55	31	0	12	0	0	0	0	2	0	0	0	100
	251	61	33	0	1	0	0	0	0	4	1	0	0	100
	252	76	15	0	4	0	0	0	0	5	0	0	0	100
	253	45	40	0	13	1	0	0	0	1	0	0	0	100
	Mean	**56.40**	**29.80**	**.00**	**10.60**	**.20**	**.00**	**.00**	**.00**	**2.40**	**.60**	**.00**	**.00**	**100.00**
	StDev	**12.92**	**9.15**	**.00**	**8.62**	**.45**	**.00**	**.00**	**.00**	**2.07**	**.89**	**.00**	**.00**	**.00**
Endocladia	154	35	3	0	59	0	0	0	0	3	0	0	0	100
	155	13	2	0	61	0	22	0	0	1	1	0	0	100
	256	19	0	0	46	12	3	0	0	20	0	0	0	100
	257	17	0	0	80	0	0	0	0	3	0	0	0	100
	258	11	0	0	32	0	56	0	0	1	0	0	0	100
	Mean	**19.00**	**1.00**	**.00**	**55.60**	**2.40**	**16.20**	**.00**	**.00**	**5.60**	**.20**	**.00**	**.00**	**100.00**
	StDev	**9.49**	**1.41**	**.00**	**17.92**	**5.37**	**24.07**	**.00**	**.00**	**8.11**	**.45**	**.00**	**.00**	**.00**
Rockweed	259	1	0	0	0	0	96	0	0	2	1	0	0	100
	260	13	6	0	10	7	43	0	0	21	0	0	0	100
	261	2	0	0	0	0	98	0	0	0	0	0	0	100
	262	64	5	0	14	0	4	0	0	12	1	0	0	100
	263	0	0	0	0	0	97	0	0	2	1	0	0	100
	Mean	**16.00**	**2.20**	**.00**	**4.80**	**1.40**	**67.60**	**.00**	**.00**	**7.40**	**.60**	**.00**	**.00**	**100.00**
	StDev	**27.34**	**3.03**	**.00**	**6.72**	**3.13**	**42.56**	**.00**	**.00**	**8.93**	**.55**	**.00**	**.00**	**.00**
Mussels	201	0	0	0	0	0	0	31	0	69	0	0	0	100
	202	4	0	0	0	0	0	63	0	33	0	0	0	100
	264	1	0	0	0	0	0	55	0	44	0	0	0	100
	265	5	0	1	0	0	0	62	1	31	0	0	0	100
	266	10	0	0	0	0	0	49	0	41	0	0	0	100
	Mean	**4.00**	**.00**	**.20**	**.00**	**.00**	**.00**	**52.00**	**.20**	**43.60**	**.00**	**.00**	**.00**	**100.00**
	StDev	**3.94**	**.00**	**.45**	**.00**	**.00**	**.00**	**13.04**	**.45**	**15.19**	**.00**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Crook Point, San Miguel Island - Fall 2000 (11/24/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	137	81	19	0	0	0	0	0	0	0	0	0	0	100
	147	57	43	0	0	0	0	0	0	0	0	0	0	100
	148	64	36	0	0	0	0	0	0	0	0	0	0	100
	149	49	47	0	3	0	0	0	0	0	1	0	0	100
	495	26	67	0	7	0	0	0	0	0	0	0	0	100
	Mean	**55.40**	**42.40**	**.00**	**2.00**	**.00**	**.00**	**.00**	**.00**	**.00**	**.20**	**.00**	**.00**	**100.00**
	StDev	**20.23**	**17.43**	**.00**	**3.08**	**.00**	**.00**	**.00**	**.00**	**.00**	**.45**	**.00**	**.00**	**.00**
Endocladia	386	57	30	0	9	0	2	0	0	0	2	0	0	100
	387	38	19	4	7	0	0	0	0	30	2	0	0	100
	388	37	35	0	20	0	0	0	0	7	1	0	0	100
	389	29	13	3	20	0	5	26	3	1	0	0	0	100
	390	26	11	0	19	0	0	15	2	26	1	0	0	100
	Mean	**37.40**	**21.60**	**1.40**	**15.00**	**.00**	**1.40**	**8.20**	**1.00**	**12.80**	**1.20**	**.00**	**.00**	**100.00**
	StDev	**12.10**	**10.53**	**1.95**	**6.44**	**.00**	**2.19**	**11.88**	**1.41**	**14.20**	**.84**	**.00**	**.00**	**.00**
Rockweed	396	36	14	0	15	0	6	16	3	8	2	0	0	100
	397	8	4	0	0	0	0	81	0	7	0	0	0	100
	398	43	18	0	2	0	12	22	2	1	0	0	0	100
	399	23	3	0	0	0	1	0	0	72	1	0	0	100
	400	40	37	2	7	0	6	2	0	4	2	0	0	100
	Mean	**30.00**	**15.20**	**.40**	**4.80**	**.00**	**5.00**	**24.20**	**1.00**	**18.40**	**1.00**	**.00**	**.00**	**100.00**
	StDev	**14.47**	**13.77**	**.89**	**6.38**	**.00**	**4.80**	**33.08**	**1.41**	**30.09**	**1.00**	**.00**	**.00**	**.00**
Mussels	381	12	7	0	0	0	0	46	1	34	0	0	0	100
	382	6	0	0	0	0	0	89	0	5	0	0	0	100
	383	9	0	0	0	0	0	86	0	5	0	0	0	100
	384	4	6	0	0	0	0	84	2	4	0	0	0	100
	385	14	3	0	0	0	0	69	9	4	1	0	0	100
	Mean	**9.00**	**3.20**	**.00**	**.00**	**.00**	**.00**	**74.80**	**2.40**	**10.40**	**.20**	**.00**	**.00**	**100.00**
	StDev	**4.12**	**3.27**	**.00**	**.00**	**.00**	**.00**	**17.85**	**3.78**	**13.20**	**.45**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Cuyler Harbor, San Miguel Island - Fall 2000 (11/27/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	416	61	37	0	0	0	0	1	0	0	0	1	0	100
	417	46	53	0	1	0	0	0	0	0	0	0	0	100
	418	46	54	0	0	0	0	0	0	0	0	0	0	100
	419	74	13	0	13	0	0	0	0	0	0	0	0	100
	420	56	25	19	0	0	0	0	0	0	0	0	0	100
	Mean	**56.60**	**36.40**	**3.80**	**2.80**	**.00**	**.00**	**.20**	**.00**	**.00**	**.00**	**.20**	**.00**	**100.00**
	StDev	**11.70**	**17.77**	**8.50**	**5.72**	**.00**	**.00**	**.45**	**.00**	**.00**	**.00**	**.45**	**.00**	**.00**
Endocladia	411	58	1	0	15	0	0	16	0	6	4	0	0	100
	412	31	48	0	10	0	0	11	0	0	0	0	0	100
	413	28	0	0	21	0	45	0	0	6	0	0	0	100
	414	31	2	0	59	0	0	0	0	6	2	0	0	100
	415	59	0	0	38	0	0	0	0	3	0	0	0	100
	Mean	**41.40**	**10.20**	**.00**	**28.60**	**.00**	**9.00**	**5.40**	**.00**	**4.20**	**1.20**	**.00**	**.00**	**100.00**
	StDev	**15.66**	**21.15**	**.00**	**20.01**	**.00**	**20.12**	**7.60**	**.00**	**2.68**	**1.79**	**.00**	**.00**	**.00**
Rockweed	406	14	0	0	0	0	73	1	0	3	9	0	0	100
	407	7	0	0	0	0	91	0	0	2	0	0	0	100
	408	8	0	0	0	0	82	0	0	8	2	0	0	100
	409	7	0	0	0	0	90	0	0	1	2	0	0	100
	410	10	0	0	0	0	90	0	0	0	0	0	0	100
	Mean	**9.20**	**.00**	**.00**	**.00**	**.00**	**85.20**	**.20**	**.00**	**2.80**	**2.60**	**.00**	**.00**	**100.00**
	StDev	**2.95**	**.00**	**.00**	**.00**	**.00**	**7.73**	**.45**	**.00**	**3.11**	**3.71**	**.00**	**.00**	**.00**
Mussels	401	11	0	4	0	0	0	80	1	1	3	0	0	100
	402	9	0	0	0	0	0	85	0	3	3	0	0	100
	403	10	0	0	0	0	0	78	1	1	10	0	0	100
	404	27	0	9	0	0	0	26	0	18	20	0	0	100
	405	44	0	8	0	0	0	26	2	5	15	0	0	100
	Mean	**20.20**	**.00**	**4.20**	**.00**	**.00**	**.00**	**59.00**	**.80**	**5.60**	**10.20**	**.00**	**.00**	**100.00**
	StDev	**15.22**	**.00**	**4.27**	**.00**	**.00**	**.00**	**30.23**	**.84**	**7.13**	**7.46**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Harris Point, San Miguel Island - Fall 2000 (11/26/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	436	27	16	21	0	0	0	13	0	21	2	0	0	100
	437	13	3	27	0	0	0	30	2	23	2	0	0	100
	438	20	0	0	2	0	0	0	0	73	5	0	0	100
	439	26	0	10	13	0	0	12	0	38	1	0	0	100
	440	41	56	0	3	0	0	0	0	0	0	0	0	100
	Mean	**25.40**	**15.00**	**11.60**	**3.60**	**.00**	**.00**	**11.00**	**.40**	**31.00**	**2.00**	**.00**	**.00**	**100.00**
	StDev	**10.36**	**23.85**	**12.22**	**5.41**	**.00**	**.00**	**12.33**	**.89**	**27.10**	**1.87**	**.00**	**.00**	**.00**
Endocladia	431	31	41	2	11	0	0	7	0	6	2	0	0	100
	432	14	26	0	45	0	0	0	0	15	0	0	0	100
	433	33	17	0	44	0	0	1	0	5	0	0	0	100
	434	58	4	0	28	9	0	0	0	1	0	0	0	100
	435	14	2	0	38	40	0	0	0	5	1	0	0	100
	Mean	**30.00**	**18.00**	**.40**	**33.20**	**9.80**	**.00**	**1.60**	**.00**	**6.40**	**.60**	**.00**	**.00**	**100.00**
	StDev	**18.07**	**16.17**	**.89**	**14.13**	**17.33**	**.00**	**3.05**	**.00**	**5.18**	**.89**	**.00**	**.00**	**.00**
Rockweed	421	45	0	0	18	36	0	0	0	0	1	0	0	100
	422	43	8	0	14	19	0	0	0	14	2	0	0	100
	423	33	2	0	37	14	0	0	0	13	0	1	0	100
	424	43	12	0	21	23	0	0	0	0	0	1	0	100
	425	33	5	0	7	51	0	0	0	4	0	0	0	100
	Mean	**39.40**	**5.40**	**.00**	**19.40**	**28.60**	**.00**	**.00**	**.00**	**6.20**	**.60**	**.40**	**.00**	**100.00**
	StDev	**5.90**	**4.77**	**.00**	**11.15**	**14.94**	**.00**	**.00**	**.00**	**6.87**	**.89**	**.55**	**.00**	**.00**
Mussels	426	15	0	1	1	0	0	62	7	12	2	0	0	100
	427	31	9	4	5	0	0	24	0	27	0	0	0	100
	428	36	11	3	0	0	0	32	0	18	0	0	0	100
	429	38	6	4	0	0	0	48	0	4	0	0	0	100
	430	17	0	2	0	0	0	65	0	16	0	0	0	100
	Mean	**27.40**	**5.20**	**2.80**	**1.20**	**.00**	**.00**	**46.20**	**1.40**	**15.40**	**.40**	**.00**	**.00**	**100.00**
	StDev	**10.74**	**5.07**	**1.30**	**2.17**	**.00**	**.00**	**18.03**	**3.13**	**8.41**	**.89**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Otter Harbor, San Miguel Island - Fall 2000 (11/25/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	370	8	11	0	0	0	0	0	0	80	0	1	0	100
	371	25	51	0	0	0	0	0	0	15	1	8	0	100
	372	59	39	0	0	0	0	0	0	0	2	0	0	100
	373	51	42	0	0	0	0	0	0	0	0	7	0	100
	374	0	0	0	0	0	0	0	0	100	0	0	0	100
	Mean	**28.60**	**28.60**	**.00**	**.00**	**.00**	**.00**	**.00**	**.00**	**39.00**	**.60**	**3.20**	**.00**	**100.00**
	StDev	**25.89**	**21.89**	**.00**	**.00**	**.00**	**.00**	**.00**	**.00**	**47.49**	**.89**	**3.96**	**.00**	**.00**
Endocladia	360	20	13	4	30	0	14	2	1	15	1	0	0	100
	361	20	1	0	39	0	18	0	0	22	0	0	0	100
	362	13	0	0	60	0	2	2	0	23	0	0	0	100
	363	1	0	0	25	0	50	0	0	24	0	0	0	100
	364	11	0	0	41	0	28	0	0	20	0	0	0	100
	Mean	**13.00**	**2.80**	**.80**	**39.00**	**.00**	**22.40**	**.80**	**.20**	**20.80**	**.20**	**.00**	**.00**	**100.00**
	StDev	**7.84**	**5.72**	**1.79**	**13.44**	**.00**	**18.02**	**1.10**	**.45**	**3.56**	**.45**	**.00**	**.00**	**.00**
Rockweed	355	15	0	0	27	0	49	0	0	6	0	3	0	100
	356	2	0	1	8	0	79	0	0	10	0	0	0	100
	357	15	0	0	17	0	50	0	0	18	0	0	0	100
	358	52	4	0	26	0	5	0	0	8	4	1	0	100
	359	24	59	0	15	0	0	0	0	1	0	1	0	100
	Mean	**21.60**	**12.60**	**.20**	**18.60**	**.00**	**36.60**	**.00**	**.00**	**8.60**	**.80**	**1.00**	**.00**	**100.00**
	StDev	**18.72**	**26.00**	**.45**	**7.96**	**.00**	**33.43**	**.00**	**.00**	**6.23**	**1.79**	**1.22**	**.00**	**.00**
Mussels	375	2	0	0	0	0	0	73	9	14	2	0	0	100
	376	6	1	1	0	0	0	66	0	26	0	0	0	100
	378	3	0	1	0	0	0	60	9	26	1	0	0	100
	379	7	0	2	0	0	0	56	11	24	0	0	0	100
	380	2	1	0	0	0	0	76	1	20	0	0	0	100
	Mean	**4.00**	**.40**	**.80**	**.00**	**.00**	**.00**	**66.20**	**6.00**	**22.00**	**.60**	**.00**	**.00**	**100.00**
	StDev	**2.35**	**.55**	**.84**	**.00**	**.00**	**.00**	**8.44**	**5.10**	**5.10**	**.89**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Fraser Cove, Santa Cruz Island - Fall 2000 (1/6/01)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	876	65	26	0	0	0	0	4	1	2	2	0	0	100
	877	45	24	0	26	0	0	1	0	3	1	0	0	100
	878	70	26	0	2	0	0	0	0	0	0	2	0	100
	879	43	46	0	6	0	0	0	0	1	0	4	0	100
	880	40	27	0	17	0	0	0	0	16	0	0	0	100
	Mean	**52.60**	**29.80**	**.00**	**10.20**	**.00**	**.00**	**1.00**	**.20**	**4.40**	**.60**	**1.20**	**.00**	**100.00**
	StDev	**13.83**	**9.12**	**.00**	**11.01**	**.00**	**.00**	**1.73**	**.45**	**6.58**	**.89**	**1.79**	**.00**	**.00**
Endocladia	881	32	25	0	25	0	0	4	0	11	3	0	0	100
	882	53	22	0	17	0	0	2	0	6	0	0	0	100
	883	39	0	0	39	20	0	0	0	2	0	0	0	100
	884	39	10	0	50	0	0	0	0	1	0	0	0	100
	885	30	2	0	56	0	0	0	0	12	0	0	0	100
	Mean	**38.60**	**11.80**	**.00**	**37.40**	**4.00**	**.00**	**1.20**	**.00**	**6.40**	**.60**	**.00**	**.00**	**100.00**
	StDev	**9.02**	**11.37**	**.00**	**16.41**	**8.94**	**.00**	**1.79**	**.00**	**5.03**	**1.34**	**.00**	**.00**	**.00**
Silvetia	896	14	0	0	10	4	63	0	0	9	0	0	0	100
	897	23	1	0	0	0	50	0	0	24	2	0	0	100
	898	17	0	0	1	0	76	0	0	6	0	0	0	100
	899	22	6	0	3	1	57	0	0	8	3	0	0	100
	900	15	2	0	1	4	78	0	0	0	0	0	0	100
	Mean	**18.20**	**1.80**	**.00**	**3.00**	**1.80**	**64.80**	**.00**	**.00**	**9.40**	**1.00**	**.00**	**.00**	**100.00**
	StDev	**4.09**	**2.49**	**.00**	**4.06**	**2.05**	**12.07**	**.00**	**.00**	**8.88**	**1.41**	**.00**	**.00**	**.00**
Mussels	891	8	0	0	0	0	0	51	0	7	34	0	0	100
	892	33	1	0	0	0	0	56	1	2	7	0	0	100
	893	7	0	0	0	0	0	79	0	3	11	0	0	100
	894	8	0	0	0	0	0	72	3	0	17	0	0	100
	895	12	0	1	0	0	0	61	7	0	19	0	0	100
	Mean	**13.60**	**.20**	**.20**	**.00**	**.00**	**.00**	**63.80**	**2.20**	**2.40**	**17.60**	**.00**	**.00**	**100.00**
	StDev	**11.01**	**.45**	**.45**	**.00**	**.00**	**.00**	**11.52**	**2.95**	**2.88**	**10.33**	**.00**	**.00**	**.00**
Pollicipes	901	11	17	5	0	0	0	37	9	10	11	0	0	100
	902	38	11	1	15	0	0	11	5	2	17	0	0	100
	903	2	0	0	0	0	0	28	23	10	37	0	0	100
	904	25	3	2	0	0	0	33	13	6	18	0	0	100
	905	7	0	0	0	0	0	34	26	4	29	0	0	100
	Mean	**16.60**	**6.20**	**1.60**	**3.00**	**.00**	**.00**	**28.60**	**15.20**	**6.40**	**22.40**	**.00**	**.00**	**100.00**
	StDev	**14.71**	**7.53**	**2.07**	**6.71**	**.00**	**.00**	**10.36**	**9.01**	**3.58**	**10.43**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Fraser Cove, Santa Cruz Island - Fall 2000 (1/6/01)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Tar	906	23	18	0	0	0	0	0	0	0	0	59	0	100
	907	51	22	0	0	0	0	0	0	0	0	27	0	100
	908	23	24	0	0	0	0	0	0	0	0	53	0	100
	909	43	14	0	0	0	0	0	0	0	0	43	0	100
	910	25	3	0	0	0	0	0	0	0	0	72	0	100
	Mean	**33.00**	**16.20**	**.00**	**.00**	**.00**	**.00**	**.00**	**.00**	**.00**	**.00**	**50.80**	**.00**	**100.00**
	StDev	**13.11**	**8.32**	**.00**	**.00**	**.00**	**.00**	**.00**	**.00**	**.00**	**.00**	**16.95**	**.00**	**.00**
Hesperophycus	886	85	4	0	6	4	0	0	0	1	0	0	0	100
	887	60	0	0	6	25	0	0	0	9	0	0	0	100
	888	40	19	0	17	23	1	0	0	0	0	0	0	100
	889	83	5	0	0	10	1	0	0	1	0	0	0	100
	890	30	5	0	6	37	19	0	0	3	0	0	0	100
	Mean	**59.60**	**6.60**	**.00**	**7.00**	**19.80**	**4.20**	**.00**	**.00**	**2.80**	**.00**	**.00**	**.00**	**100.00**
	StDev	**24.76**	**7.23**	**.00**	**6.16**	**13.03**	**8.29**	**.00**	**.00**	**3.63**	**.00**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Orizaba Cove, Santa Cruz Island - Fall 2000 (1/5/01)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	851	65	25	10	0	0	0	0	0	0	0	0	0	100
	852	21	73	0	0	0	0	0	0	6	0	0	0	100
	853	36	63	0	0	0	0	0	0	1	0	0	0	100
	854	41	40	4	0	0	0	0	0	14	1	0	0	100
	855	36	58	0	0	0	0	0	0	6	0	0	0	100
	Mean	**39.80**	**51.80**	**2.80**	**.00**	**.00**	**.00**	**.00**	**.00**	**5.40**	**.20**	**.00**	**.00**	**100.00**
	StDev	**15.96**	**19.18**	**4.38**	**.00**	**.00**	**.00**	**.00**	**.00**	**5.55**	**.45**	**.00**	**.00**	**.00**
Silvetia	866	47	15	5	0	0	0	16	0	17	0	0	0	100
	867	58	4	7	2	0	10	0	0	19	0	0	0	100
	868	40	34	11	2	0	2	1	0	10	0	0	0	100
	869	51	15	13	1	0	4	0	0	14	2	0	0	100
	870	50	8	6	10	0	7	0	0	18	1	0	0	100
	Mean	**49.20**	**15.20**	**8.40**	**3.00**	**.00**	**4.60**	**3.40**	**.00**	**15.60**	**.60**	**.00**	**.00**	**100.00**
	StDev	**6.53**	**11.52**	**3.44**	**4.00**	**.00**	**3.97**	**7.06**	**.00**	**3.65**	**.89**	**.00**	**.00**	**.00**
Mussels	861	9	1	3	0	0	0	77	0	10	0	0	0	100
	862	1	1	1	0	0	0	96	0	1	0	0	0	100
	863	14	1	1	0	0	0	65	0	17	2	0	0	100
	864	4	2	5	0	0	0	84	1	4	0	0	0	100
	865	5	0	1	0	0	0	51	4	37	2	0	0	100
	Mean	**6.60**	**1.00**	**2.20**	**.00**	**.00**	**.00**	**74.60**	**1.00**	**13.80**	**.80**	**.00**	**.00**	**100.00**
	StDev	**5.03**	**.71**	**1.79**	**.00**	**.00**	**.00**	**17.33**	**1.73**	**14.34**	**1.10**	**.00**	**.00**	**.00**
Tetraclita	871	18	30	19	1	0	0	6	0	26	0	0	0	100
	872	19	4	29	0	0	0	8	1	33	6	0	0	100
	873	31	8	33	0	0	0	2	0	23	3	0	0	100
	874	26	1	31	0	0	0	7	4	21	10	0	0	100
	875	27	4	44	3	0	0	0	0	20	2	0	0	100
	Mean	**24.20**	**9.40**	**31.20**	**.80**	**.00**	**.00**	**4.60**	**1.00**	**24.60**	**4.20**	**.00**	**.00**	**100.00**
	StDev	**5.54**	**11.78**	**8.96**	**1.30**	**.00**	**.00**	**3.44**	**1.73**	**5.22**	**3.90**	**.00**	**.00**	**.00**
Hesperophycus	856	30	7	0	55	4	2	1	0	1	0	0	0	100
	857	40	15	8	27	5	1	0	0	3	1	0	0	100
	858	48	3	1	23	22	0	0	0	3	0	0	0	100
	859	31	13	1	54	0	0	0	0	0	0	1	0	100
	860	45	18	0	35	1	0	0	0	1	0	0	0	100
	Mean	**38.80**	**11.20**	**2.00**	**38.80**	**6.40**	**.60**	**.20**	**.00**	**1.60**	**.20**	**.20**	**.00**	**100.00**
	StDev	**8.11**	**6.10**	**3.39**	**14.97**	**8.96**	**.89**	**.45**	**.00**	**1.34**	**.45**	**.45**	**.00**	**.00**

Percent Cover of Index Species

Prisoner's Harbor, Santa Cruz Island - Fall 2000 (1/5/01)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	826	100	0	0	0	0	0	0	0	0	0	0	0	100
	827	13	1	0	0	0	20	1	0	65	0	0	0	100
	828	44	11	1	21	1	15	0	0	6	1	0	0	100
	829	44	38	2	8	0	0	0	0	4	4	0	0	100
	830	63	15	0	7	0	0	0	0	14	1	0	0	100
	Mean	**52.80**	**13.00**	**.60**	**7.20**	**.20**	**7.00**	**.20**	**.00**	**17.80**	**1.20**	**.00**	**.00**	**100.00**
	StDev	**31.90**	**15.38**	**.89**	**8.58**	**.45**	**9.75**	**.45**	**.00**	**26.87**	**1.64**	**.00**	**.00**	**.00**
Endocladia	831	22	22	0	42	0	0	0	0	14	0	0	0	100
	832	14	18	0	51	8	0	0	0	7	2	0	0	100
	833	29	32	0	36	3	0	0	0	0	0	0	0	100
	834	15	24	0	53	0	3	0	0	5	0	0	0	100
	835	20	12	0	61	6	0	0	0	1	0	0	0	100
	Mean	**20.00**	**21.60**	**.00**	**48.60**	**3.40**	**.60**	**.00**	**.00**	**5.40**	**.40**	**.00**	**.00**	**100.00**
	StDev	**6.04**	**7.40**	**.00**	**9.76**	**3.58**	**1.34**	**.00**	**.00**	**5.59**	**.89**	**.00**	**.00**	**.00**
Silvetia	846	1	0	0	0	0	98	0	0	1	0	0	0	100
	847	6	0	0	0	0	76	0	0	18	0	0	0	100
	848	0	0	0	0	0	98	0	0	2	0	0	0	100
	849	0	0	0	0	0	91	0	0	7	2	0	0	100
	850	0	0	0	0	0	84	0	0	16	0	0	0	100
	Mean	**1.40**	**.00**	**.00**	**.00**	**.00**	**89.40**	**.00**	**.00**	**8.80**	**.40**	**.00**	**.00**	**100.00**
	StDev	**2.61**	**.00**	**.00**	**.00**	**.00**	**9.48**	**.00**	**.00**	**7.85**	**.89**	**.00**	**.00**	**.00**
Mussels	841	9	8	0	0	0	0	78	0	1	4	0	0	100
	842	3	1	0	0	0	0	89	0	7	0	0	0	100
	843	4	0	0	0	0	0	90	0	3	3	0	0	100
	844	4	0	0	0	0	0	89	0	7	0	0	0	100
	845	9	1	7	0	0	0	50	1	28	4	0	0	100
	Mean	**5.80**	**2.00**	**1.40**	**.00**	**.00**	**.00**	**79.20**	**.20**	**9.20**	**2.20**	**.00**	**.00**	**100.00**
	StDev	**2.95**	**3.39**	**3.13**	**.00**	**.00**	**.00**	**17.05**	**.45**	**10.83**	**2.05**	**.00**	**.00**	**.00**
Hesperophycus	836	26	10	0	37	22	0	0	0	5	0	0	0	100
	837	48	17	0	22	11	0	0	0	2	0	0	0	100
	838	52	2	0	18	22	0	0	0	3	3	0	0	100
	839	50	38	0	7	4	0	0	0	1	0	0	0	100
	840	55	25	0	16	2	0	0	0	0	2	0	0	100
	Mean	**46.20**	**18.40**	**.00**	**20.00**	**12.20**	**.00**	**.00**	**.00**	**2.20**	**1.00**	**.00**	**.00**	**100.00**
	StDev	**11.58**	**13.87**	**.00**	**10.98**	**9.55**	**.00**	**.00**	**.00**	**1.92**	**1.41**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Trailer, Santa Cruz Island - Fall 2000 (1/7/01)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	911	88	9	0	2	0	0	1	0	0	0	0	0	100
	912	80	18	0	0	0	0	0	0	1	1	0	0	100
	913	59	30	0	8	0	0	0	0	1	2	0	0	100
	914	66	32	0	0	0	0	0	0	0	2	0	0	100
	915	56	42	0	0	0	0	0	0	0	2	0	0	100
	Mean	**69.80**	**26.20**	**.00**	**2.00**	**.00**	**.00**	**.20**	**.00**	**.40**	**1.40**	**.00**	**.00**	**100.00**
	StDev	**13.75**	**12.85**	**.00**	**3.46**	**.00**	**.00**	**.45**	**.00**	**.55**	**.89**	**.00**	**.00**	**.00**
Silvetia	926	7	0	0	0	0	90	0	0	3	0	0	0	100
	927	18	0	0	0	0	78	0	0	4	0	0	0	100
	928	12	0	0	0	0	83	0	0	5	0	0	0	100
	929	5	0	0	0	0	92	0	0	3	0	0	0	100
	930	8	1	0	0	0	81	0	0	9	1	0	0	100
	Mean	**10.00**	**.20**	**.00**	**.00**	**.00**	**84.80**	**.00**	**.00**	**4.80**	**.20**	**.00**	**.00**	**100.00**
	StDev	**5.15**	**.45**	**.00**	**.00**	**.00**	**5.97**	**.00**	**.00**	**2.49**	**.45**	**.00**	**.00**	**.00**
Mussels	921	6	5	2	0	0	0	69	4	6	8	0	0	100
	922	7	0	0	0	0	0	63	0	19	11	0	0	100
	923	9	1	0	0	0	0	59	0	12	19	0	0	100
	924	16	5	2	0	0	0	61	0	7	9	0	0	100
	925	21	6	1	0	0	0	66	1	4	1	0	0	100
	Mean	**11.80**	**3.40**	**1.00**	**.00**	**.00**	**.00**	**63.60**	**1.00**	**9.60**	**9.60**	**.00**	**.00**	**100.00**
	StDev	**6.46**	**2.70**	**1.00**	**.00**	**.00**	**.00**	**3.97**	**1.73**	**6.02**	**6.47**	**.00**	**.00**	**.00**
Hesperophycus	916	66	1	0	14	11	7	0	0	1	0	0	0	100
	917	35	1	0	12	5	47	0	0	0	0	0	0	100
	918	47	2	0	15	5	26	0	0	5	0	0	0	100
	919	48	7	0	4	26	15	0	0	0	0	0	0	100
	920	58	9	0	13	9	2	0	0	8	1	0	0	100
	Mean	**50.80**	**4.00**	**.00**	**11.60**	**11.20**	**19.40**	**.00**	**.00**	**2.80**	**.20**	**.00**	**.00**	**100.00**
	StDev	**11.78**	**3.74**	**.00**	**4.39**	**8.67**	**17.90**	**.00**	**.00**	**3.56**	**.45**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Willows Anchorage, Santa Cruz Island - Fall 2000 (1/8/01)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Endocladia	931	36	0	0	62	0	0	0	0	1	1	0	0	100
	932	36	1	0	60	0	0	0	0	3	0	0	0	100
	933	32	0	0	64	0	0	0	0	4	0	0	0	100
	934	38	2	0	48	0	0	0	0	12	0	0	0	100
	935	53	0	3	29	0	0	0	0	14	1	0	0	100
	Mean	**39.00**	**.60**	**.60**	**52.60**	**.00**	**.00**	**.00**	**.00**	**6.80**	**.40**	**.00**	**.00**	**100.00**
	StDev	**8.12**	**.89**	**1.34**	**14.59**	**.00**	**.00**	**.00**	**.00**	**5.81**	**.55**	**.00**	**.00**	**.00**
Silvetia	946	33	0	0	0	0	49	0	0	17	1	0	0	100
	947	48	1	1	27	0	0	0	0	20	3	0	0	100
	948	6	0	0	1	0	58	0	0	25	10	0	0	100
	949	0	0	0	0	0	94	0	0	5	1	0	0	100
	950	40	0	0	2	0	11	0	0	29	18	0	0	100
	Mean	**25.40**	**.20**	**.20**	**6.00**	**.00**	**42.40**	**.00**	**.00**	**19.20**	**6.60**	**.00**	**.00**	**100.00**
	StDev	**21.23**	**.45**	**.45**	**11.77**	**.00**	**37.86**	**.00**	**.00**	**9.18**	**7.37**	**.00**	**.00**	**.00**
Mussels	941	16	0	20	0	0	0	25	4	30	5	0	0	100
	942	20	0	2	1	0	0	39	13	13	12	0	0	100
	943	8	0	4	0	0	0	36	21	20	11	0	0	100
	944	12	0	3	0	0	0	29	25	21	10	0	0	100
	945	10	0	0	1	0	0	42	3	35	9	0	0	100
	Mean	**13.20**	**.00**	**5.80**	**.40**	**.00**	**.00**	**34.20**	**13.20**	**23.80**	**9.40**	**.00**	**.00**	**100.00**
	StDev	**4.82**	**.00**	**8.07**	**.55**	**.00**	**.00**	**7.05**	**9.86**	**8.70**	**2.70**	**.00**	**.00**	**.00**
Hesperophycus	936	89	5	0	4	0	0	0	0	1	1	0	0	100
	937	70	8	0	4	5	1	0	0	12	0	0	0	100
	938	79	6	0	2	6	0	0	0	7	0	0	0	100
	939	20	0	0	0	6	70	0	0	4	0	0	0	100
	940	32	1	0	6	34	17	0	0	8	2	0	0	100
	Mean	**58.00**	**4.00**	**.00**	**3.20**	**10.20**	**17.60**	**.00**	**.00**	**6.40**	**.60**	**.00**	**.00**	**100.00**
	StDev	**30.27**	**3.39**	**.00**	**2.28**	**13.54**	**30.17**	**.00**	**.00**	**4.16**	**.89**	**.00**	**.00**	**.00**

Percent Cover of Index Species

East Point, Santa Rosa Island - Fall 2000 (12/7/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	575	76	21	0	0	0	0	1	0	2	0	0	0	100
	576	38	12	0	26	22	0	0	0	2	0	0	0	100
	577	29	45	0	20	0	2	0	0	4	0	0	0	100
	578	86	14	0	0	0	0	0	0	0	0	0	0	100
	579	72	28	0	0	0	0	0	0	0	0	0	0	100
	Mean	**60.20**	**24.00**	**.00**	**9.20**	**4.40**	**.40**	**.20**	**.00**	**1.60**	**.00**	**.00**	**.00**	**100.00**
	StDev	**25.10**	**13.32**	**.00**	**12.77**	**9.84**	**.89**	**.45**	**.00**	**1.67**	**.00**	**.00**	**.00**	**.00**
Endocladia	580	37	3	0	49	5	4	0	0	1	1	0	0	100
	581	31	6	0	56	5	0	0	0	1	1	0	0	100
	582	21	0	0	40	30	2	0	0	6	1	0	0	100
	583	34	9	0	48	5	1	0	0	2	1	0	0	100
	584	19	6	0	71	1	1	0	0	1	1	0	0	100
	Mean	**28.40**	**4.80**	**.00**	**52.80**	**9.20**	**1.60**	**.00**	**.00**	**2.20**	**1.00**	**.00**	**.00**	**100.00**
	StDev	**7.99**	**3.42**	**.00**	**11.65**	**11.76**	**1.52**	**.00**	**.00**	**2.17**	**.00**	**.00**	**.00**	**.00**
Rockweed	585	5	0	0	2	0	81	0	0	12	0	0	0	100
	586	18	0	0	1	0	62	0	0	17	2	0	0	100
	587	3	0	0	0	0	89	0	0	7	1	0	0	100
	588	8	1	0	0	0	79	0	0	12	0	0	0	100
	589	5	0	0	3	0	87	0	0	5	0	0	0	100
	Mean	**7.80**	**.20**	**.00**	**1.20**	**.00**	**79.60**	**.00**	**.00**	**10.60**	**.60**	**.00**	**.00**	**100.00**
	StDev	**5.97**	**.45**	**.00**	**1.30**	**.00**	**10.67**	**.00**	**.00**	**4.72**	**.89**	**.00**	**.00**	**.00**
Mussels	590	0	0	0	0	0	0	72	0	21	7	0	0	100
	591	0	1	1	0	0	0	70	1	16	11	0	0	100
	592	0	0	0	0	0	0	79	0	17	4	0	0	100
	593	2	0	0	0	0	0	85	0	13	0	0	0	100
	594	5	0	0	0	0	0	79	0	11	5	0	0	100
	Mean	**1.40**	**.20**	**.20**	**.00**	**.00**	**.00**	**77.00**	**.20**	**15.60**	**5.40**	**.00**	**.00**	**100.00**
	StDev	**2.19**	**.45**	**.45**	**.00**	**.00**	**.00**	**6.04**	**.45**	**3.85**	**4.04**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Ford Point, Santa Rosa Island - Fall 2000 (12/11/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	520	65	13	0	0	0	0	0	0	16	6	0	0	100
	521	48	50	0	0	0	0	1	0	1	0	0	0	100
	522	89	9	0	0	0	0	0	0	0	2	0	0	100
	523	22	38	0	37	0	0	0	0	0	3	0	0	100
	524	80	20	0	0	0	0	0	0	0	0	0	0	100
	Mean	**60.80**	**26.00**	**.00**	**7.40**	**.00**	**.00**	**.20**	**.00**	**3.40**	**2.20**	**.00**	**.00**	**100.00**
	StDev	**26.70**	**17.42**	**.00**	**16.55**	**.00**	**.00**	**.45**	**.00**	**7.06**	**2.49**	**.00**	**.00**	**.00**
Endocladia	525	38	13	0	28	0	0	5	0	16	0	0	0	100
	526	24	2	0	43	0	0	4	0	25	2	0	0	100
	527	31	2	0	26	0	0	8	0	33	0	0	0	100
	528	30	2	0	20	0	0	7	0	37	4	0	0	100
	529	30	4	0	29	0	0	2	0	33	2	0	0	100
	Mean	**30.60**	**4.60**	**.00**	**29.20**	**.00**	**.00**	**5.20**	**.00**	**28.80**	**1.60**	**.00**	**.00**	**100.00**
	StDev	**4.98**	**4.77**	**.00**	**8.47**	**.00**	**.00**	**2.39**	**.00**	**8.38**	**1.67**	**.00**	**.00**	**.00**
Mussels	530	54	5	0	0	0	0	14	1	23	3	0	0	100
	531	6	0	0	0	0	0	86	0	3	5	0	0	100
	532	6	0	0	0	0	0	76	0	13	5	0	0	100
	533	35	0	0	1	0	0	46	0	18	0	0	0	100
	534	28	0	0	0	0	0	22	4	35	11	0	0	100
	Mean	**25.80**	**1.00**	**.00**	**.20**	**.00**	**.00**	**48.80**	**1.00**	**18.40**	**4.80**	**.00**	**.00**	**100.00**
	StDev	**20.43**	**2.24**	**.00**	**.45**	**.00**	**.00**	**31.86**	**1.73**	**11.87**	**4.02**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Fossil Reef, Santa Rosa Island - Fall 2000 (12/8/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	605	68	30	0	1	0	0	0	0	1	0	0	0	100
	606	55	36	0	0	0	0	0	0	4	1	4	0	100
	607	64	33	0	0	0	0	0	0	0	2	1	0	100
	608	77	21	0	0	0	0	0	0	2	0	0	0	100
	609	78	21	0	0	0	0	0	0	0	0	1	0	100
	Mean	**68.40**	**28.20**	**.00**	**.20**	**.00**	**.00**	**.00**	**.00**	**1.40**	**.60**	**1.20**	**.00**	**100.00**
	StDev	**9.56**	**6.91**	**.00**	**.45**	**.00**	**.00**	**.00**	**.00**	**1.67**	**.89**	**1.64**	**.00**	**.00**
Endocladia	610	54	32	0	13	0	0	0	0	1	0	0	0	100
	611	71	23	0	0	0	1	0	0	0	5	0	0	100
	612	28	1	0	0	0	69	0	0	2	0	0	0	100
	613	49	10	0	35	0	5	0	0	1	0	0	0	100
	614	17	0	0	0	0	82	0	0	1	0	0	0	100
	Mean	**43.80**	**13.20**	**.00**	**9.60**	**.00**	**31.40**	**.00**	**.00**	**1.00**	**1.00**	**.00**	**.00**	**100.00**
	StDev	**21.44**	**13.99**	**.00**	**15.27**	**.00**	**40.56**	**.00**	**.00**	**.71**	**2.24**	**.00**	**.00**	**.00**
Rockweed	615	81	3	0	0	0	1	1	0	12	2	0	0	100
	616	73	7	0	2	0	0	0	0	16	2	0	0	100
	617	60	2	0	0	0	28	0	0	10	0	0	0	100
	618	56	0	0	9	0	1	0	0	32	2	0	0	100
	619	70	3	0	8	0	9	0	0	8	2	0	0	100
	Mean	**68.00**	**3.00**	**.00**	**3.80**	**.00**	**7.80**	**.20**	**.00**	**15.60**	**1.60**	**.00**	**.00**	**100.00**
	StDev	**10.07**	**2.55**	**.00**	**4.38**	**.00**	**11.86**	**.45**	**.00**	**9.63**	**.89**	**.00**	**.00**	**.00**
Mussels	620	7	0	5	0	0	0	25	0	35	28	0	0	100
	621	6	1	8	0	0	0	27	0	28	30	0	0	100
	622	11	8	14	0	0	0	40	3	18	6	0	0	100
	623	17	0	7	0	0	0	31	6	30	9	0	0	100
	624	4	0	1	0	0	0	1	0	47	47	0	0	100
	Mean	**9.00**	**1.80**	**7.00**	**.00**	**.00**	**.00**	**24.80**	**1.80**	**31.60**	**24.00**	**.00**	**.00**	**100.00**
	StDev	**5.15**	**3.49**	**4.74**	**.00**	**.00**	**.00**	**14.50**	**2.68**	**10.60**	**16.81**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Johnson's Lee, Santa Rosa Island - Fall 2000 (12/10/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	500	59	39	0	0	0	0	0	0	2	0	0	0	100
	501	49	49	0	0	0	0	0	0	0	2	0	0	100
	502	84	14	0	0	0	0	0	0	0	2	0	0	100
	503	18	46	0	34	0	0	0	0	0	2	0	0	100
	504	45	51	1	1	0	0	0	0	1	1	0	0	100
	Mean	**51.00**	**39.80**	**.20**	**7.00**	**.00**	**.00**	**.00**	**.00**	**.60**	**1.40**	**.00**	**.00**	**100.00**
	StDev	**23.89**	**15.12**	**.45**	**15.10**	**.00**	**.00**	**.00**	**.00**	**.89**	**.89**	**.00**	**.00**	**.00**
Endocladia	505	43	2	1	24	0	0	26	1	3	0	0	0	100
	506	29	4	1	61	0	0	0	0	4	1	0	0	100
	507	34	3	0	46	0	0	8	0	7	2	0	0	100
	508	39	7	0	29	0	0	15	3	3	4	0	0	100
	509	39	3	1	42	0	0	9	0	5	1	0	0	100
	Mean	**36.80**	**3.80**	**.60**	**40.40**	**.00**	**.00**	**11.60**	**.80**	**4.40**	**1.60**	**.00**	**.00**	**100.00**
	StDev	**5.40**	**1.92**	**.55**	**14.64**	**.00**	**.00**	**9.66**	**1.30**	**1.67**	**1.52**	**.00**	**.00**	**.00**
Mussels	510	6	3	0	0	0	0	0	0	43	48	0	0	100
	511	5	0	0	0	0	0	1	0	12	82	0	0	100
	512	24	0	2	0	0	0	55	6	12	1	0	0	100
	513	39	0	1	0	0	0	13	0	24	23	0	0	100
	514	9	0	0	0	0	0	0	0	14	77	0	0	100
	Mean	**16.60**	**.60**	**.60**	**.00**	**.00**	**.00**	**13.80**	**1.20**	**21.00**	**46.20**	**.00**	**.00**	**100.00**
	StDev	**14.67**	**1.34**	**.89**	**.00**	**.00**	**.00**	**23.68**	**2.68**	**13.27**	**34.69**	**.00**	**.00**	**.00**

Percent Cover of Index Species

NW Talcott, Santa Rosa Island - Fall 2000 (12/9/00)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	560	47	42	0	7	0	0	0	0	0	1	3	0	100
	561	58	39	0	0	0	1	0	0	0	0	2	0	100
	562	77	18	0	0	0	0	0	0	2	3	0	0	100
	563	35	1	0	1	0	63	0	0	0	0	0	0	100
	564	29	63	0	0	0	0	0	0	3	5	0	0	100
	Mean	**49.20**	**32.60**	**.00**	**1.60**	**.00**	**12.80**	**.00**	**.00**	**1.00**	**1.80**	**1.00**	**.00**	**100.00**
	StDev	**19.14**	**23.80**	**.00**	**3.05**	**.00**	**28.07**	**.00**	**.00**	**1.41**	**2.17**	**1.41**	**.00**	**.00**
Endocladia	555	28	0	0	22	0	48	0	0	2	0	0	0	100
	556	84	8	0	4	0	0	0	0	2	2	0	0	100
	557	19	0	0	4	0	71	0	0	3	3	0	0	100
	558	35	21	0	12	0	0	2	0	28	2	0	0	100
	559	63	11	0	0	0	1	0	0	24	1	0	0	100
	Mean	**45.80**	**8.00**	**.00**	**8.40**	**.00**	**24.00**	**.40**	**.00**	**11.80**	**1.60**	**.00**	**.00**	**100.00**
	StDev	**26.96**	**8.75**	**.00**	**8.76**	**.00**	**33.41**	**.89**	**.00**	**13.05**	**1.14**	**.00**	**.00**	**.00**
Rockweed	565	12	0	0	0	0	85	0	0	3	0	0	0	100
	566	18	1	0	0	0	81	0	0	0	0	0	0	100
	567	8	0	0	0	0	82	0	0	4	6	0	0	100
	568	41	0	0	13	0	44	0	0	2	0	0	0	100
	569	62	1	0	0	0	23	0	0	13	1	0	0	100
	Mean	**28.20**	**.40**	**.00**	**2.60**	**.00**	**63.00**	**.00**	**.00**	**4.40**	**1.40**	**.00**	**.00**	**100.00**
	StDev	**22.81**	**.55**	**.00**	**5.81**	**.00**	**27.97**	**.00**	**.00**	**5.03**	**2.61**	**.00**	**.00**	**.00**
Mussels	550	11	5	0	1	0	0	71	6	3	3	0	0	100
	551	7	0	0	0	0	0	77	0	11	5	0	0	100
	552	15	0	1	0	0	0	70	6	5	3	0	0	100
	553	18	4	6	0	0	0	32	7	30	3	0	0	100
	554	16	1	6	0	0	0	46	8	14	9	0	0	100
	Mean	**13.40**	**2.00**	**2.60**	**.20**	**.00**	**.00**	**59.20**	**5.40**	**12.60**	**4.60**	**.00**	**.00**	**100.00**
	StDev	**4.39**	**2.35**	**3.13**	**.45**	**.00**	**.00**	**19.28**	**3.13**	**10.69**	**2.61**	**.00**	**.00**	**.00**

Percent Cover of Index Species

Landing Cove, Santa Barbara Island - Fall 2000 (1/22/01)

Zone	Plot	Bare Rock	Acorn Barnacle	Tetra-clita	Endo-cladia	Hespero-phycus	Silvetia	Mussels	Turf-weed	Leaf Barnacle	Misc Algae	Misc Animal	Tar	Other	Total
Barnacle	315	50	8	7	3	0	0	0	0	0	32	0	0	0	100
	316	35	16	11	6	0	0	0	0	0	32	0	0	0	100
	317	15	2	20	3	0	0	5	0	0	54	1	0	0	100
	318	15	0	27	1	0	0	30	0	0	26	1	0	0	100
	319	12	5	6	0	0	0	0	0	0	77	0	0	0	100
	Mean	**25.40**	**6.20**	**14.20**	**2.60**	**.00**	**.00**	**7.00**	**.00**	**.00**	**44.20**	**.40**	**.00**	**.00**	**100.00**
	StDev	**16.53**	**6.26**	**9.04**	**2.30**	**.00**	**.00**	**13.04**	**.00**	**.00**	**21.22**	**.55**	**.00**	**.00**	**.00**
Rockweed	310	22	4	0	0	0	4	15	0	0	55	0	0	0	100
	311	29	11	2	0	0	0	3	0	0	53	2	0	0	100
	312	30	4	1	0	0	4	0	0	0	54	7	0	0	100
	313	35	6	1	0	0	0	0	0	0	56	2	0	0	100
	314	32	10	0	0	0	3	1	0	0	53	1	0	0	100
	Mean	**29.60**	**7.00**	**.80**	**.00**	**.00**	**2.20**	**3.80**	**.00**	**.00**	**54.20**	**2.40**	**.00**	**.00**	**100.00**
	StDev	**4.83**	**3.32**	**.84**	**.00**	**.00**	**2.05**	**6.38**	**.00**	**.00**	**1.30**	**2.70**	**.00**	**.00**	**.00**
Mussels	325	2	0	6	0	0	0	80	0	3	6	3	0	0	100
	326	6	1	2	0	0	0	22	0	0	40	29	0	0	100
	327	2	1	2	0	0	0	78	0	6	10	1	0	0	100
	328	1	1	0	0	0	0	77	0	6	14	1	0	0	100
	329	4	0	5	0	0	0	78	0	1	9	3	0	0	100
	Mean	**3.00**	**.60**	**3.00**	**.00**	**.00**	**.00**	**67.00**	**.00**	**3.20**	**15.80**	**7.40**	**.00**	**.00**	**100.00**
	StDev	**2.00**	**.55**	**2.45**	**.00**	**.00**	**.00**	**25.18**	**.00**	**2.77**	**13.83**	**12.12**	**.00**	**.00**	**.00**
Red Algal Turf	320	1	0	0	0	0	0	0	74	0	20	5	0	0	100
	321	4	0	0	0	0	0	0	80	0	13	3	0	0	100
	322	0	0	0	0	0	0	0	35	0	0	8	0	57	100
	323	0	0	0	0	0	0	0	23	0	0	11	0	66	100
	324	0	0	0	0	0	0	0	59	0	33	8	0	0	100
	Mean	**1.00**	**.00**	**.00**	**.00**	**.00**	**.00**	**.00**	**54.20**	**.00**	**13.20**	**7.00**	**.00**	**24.60**	**100.00**
	StDev	**1.73**	**.00**	**.00**	**.00**	**.00**	**.00**	**.00**	**24.61**	**.00**	**14.02**	**3.08**	**.00**	**33.83**	**.00**

Appendix B. Trip Reports

The following are trip reports from the Rocky Intertidal Monitoring 2000 field season (April 2000 through January 2001). Reports were written by Dan Richards, Derek Lerma and David Kushner. The reports summarize the work done during each monitoring event, provide a quick summary of the data collected, and serve as metadata for the information collected.

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Spring 2000 Rocky Intertidal Monitoring Trip Reports

Santa Cruz Island, April 10-14, 2000 (Database event #2000-A)

PERSONNEL: Dan Richards, Marine Biologist, Channel Islands National Park
Derek Lerma, Biological Technician, Channel Islands National Park
Julie Goodson, Education Coordinator, Channel Islands National Marine Sanctuary

PROCEDURE: 0800 departure on the OCEAN RANGER to Prisoners Harbor, arriving 1000 hrs and immediately beginning monitoring at Prisoners after offloading gear. We drove to the west end trailer from there and worked Tuesday and Wednesday at the west end sites, returning to the UC Research Station for Wednesday and Thursday nights. Willows Anchorage was monitored on Thursday. Friday morning was spent packing and cleaning the station. The Ocean Ranger arrived about 1215 to pick us up. We were to photograph the plots at Orizaba Cove, but with pick-ups at Scorpion and Frenchy's on the way in, there was not enough time. Excellent weather conditions made up for the moderate tides and provided us with plenty of time to complete the sampling. Lots of different flowers were blooming, most notably all the *Ceanothus* spp.

At all sites, birds and pinnipeds were counted, photoplots were photographed and scored in the field, all species in photoplots were censused and motile invertebrates over one centimeter were counted except at Prisoners. Eelgrass transects and owl limpet plots were completed where present and 30-minute searches for sea stars and abalone were done at each site. Data sheets were checked and notes completed each evening.

RESULTS:
Prisoner's Harbor, 4/10/00, Low tide –0.0 ft at 0955 hrs, air temp 19.5°C, water temp. 15.0°C, clear sky, slight breeze from the NW, waves calm, surge light. On site 1030-1300 hrs. No shore birds were present and one harbor seal was observed swimming next to the reef.

Barnacle plot B1 was 2/3 covered by cobble. The lower right bolt was missing and upper right was bent and loose, upper left was buried. The plot was all bare rock. Two of the other plots had 24-30% cover of *Balanus glandula* or *Chthamalus fissus/dalli*. The other two plots had moderate cover of *Endocladia muricata* and *Silvetia compressa*. In general *Balanus/Chthamalus* recruitment looks strong this year. Young *Tetraclita rubescens* were abundant in some of the mussel plots and it looks like a good recruitment year for them as well.

Nine ochre stars, *Pisaster ochraceus*, were found in a thirty-minute search. No abalone were found. California mussels, *Mytilus californianus* occupied 32-81% of the cover in the mussel plots. *Endocladia muricata* was doing well in all the plots in that zone with 39-58% cover. *Silvetia compressa* cover was 81-94% cover in the Silvetia zone. An assortment of mollusks (*Lepidochitona hartwegii*, *Acanthina punctulata*, and *Lottia pelta)* was present in moderate numbers in most plots in this zone. Sandcastle worm, *Phragmatopoma californica,* was present in most plots also. *Hesperophycus californica* only covered 7-19% in three of the plots and was present only as small recruits in two plots in the Hesperophycus zone. *Endocladia* was common in each of the plots in this zone.

Serpulorbis squamigerus, *Pseudochama exogyra*, *Egregia menziesii*, *Chondracanthus spinosus*, and *C. canaliculatus* were all common on the lower inside reef. Some *Sargassum muticum* was present. *Cumagloia andersonii* was common especially in the Silvetia zone. A little *Phyllospadix torreyi* was present on the inner reef.

A small bit of blue paint was found on the rocks below plots E1/E2 that looks like it could be from a boat grounding. There was not any abnormal amount of bare rock there however.

Photoplot summary – mean % cover by zone at Prisoner's Harbor (5 plots/zone)

Site	Zone	Bare Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
PH	Barnacle	51.2	11.4	7.8	18.8	0.0	9.6	1.2	0.0
PH	Endocladia	24.6	18.2	48.8	1.2	0.0	6.2	1.0	0.0
PH	Silvetia	1.6	0.0	0.0	91.6	0.2	6.4	0.2	0.0
PH	Mussels	14.4	3.6	0.4	0.0	59.2	15.4	7.0	0.0
PH	Hesperophycus	40.6	17.2	25.8	9.8	0.0	5.8	0.8	0.0

(Rockweed = *Hesperophycus* and *Silvetia* combined, data are separate in database)

Trailer, 4/11/00, tide –0.1 ft at 1120 hrs, air temp 20° C, water temp 14.5°C, wind NW at 5 mph, seas calm, surge light. On site 0900-1400 hrs. Seven harbor seals were hauled out west of the site. Shore birds present: 1 Western Gull, 2 Black Oystercatchers, 1 American/Black hybrid Oystercatcher.

The rock louse, *Ligia occidentalis* was extremely abundant on the beach, cliffs and rocks. All sizes were represented. Shore crabs were present but not abundant.

Large owl limpets were noted on boulders at the southern edge of the site. Owl limpet *Lottia gigantea* populations looked good, but the total count was 143, down from 161 and 166 in spring and fall of 1999. Sizes ranged from 16-88 mm. Four black abalone, *Haliotis cracherodii*, were found during a 30-minute search with sizes ranging from 70-139 mm. During a 30-minute search, 16 *Pisaster ochraceus* and 1 *P. giganteus* were found. This is considerably more than we usually find, but conditions are usually not this favorable for searching at this site.

Heavy mussel recruitment was noted on some boulders near the surfgrass transects with the California mussels about 20 mm long. Mussel cover ranged from 45-73% in the mussel zone photoplots. Coralline algae was the next dominant species. Surfgrass transects were primarily *Phyllospadix torreyi* with a mix of *Chondracanthus spinosus*. *C. canaliculatus*, *Mastocarpus papillatus*, *Corallina vancouveriensis*, *Prionitis lanceolata*, *Phragmatopoma californica* and *Egregia menziesii*. *Chthamalus* sp. dominated the barnacle plots with 10-30% cover. *Endocladia muricata* was 40% of the cover in barnacle plot B1. *Silvetia compressa* cover was high at 71-93% with numerous *Lottia pelta* and *Lepidochitona hartwegii* under the plants. *Hesperophycus californicus* was healthy and formed a moderate cover of 7-28% in Hesperophycus zone plots. Black turban snails, *Tegula funebralis* and *T. gallina* were both present, as were both *Littorina* snails, though not particularly abundant. Also present but not abundant were *Nucella emarginata* and *Acanthina punctulata*.

Photoplot summary – mean % cover by zone at Trailer (5 plots/zone) (Rockweed = *Hesperophycus* and *Silvetia* combined, data are separate in database)

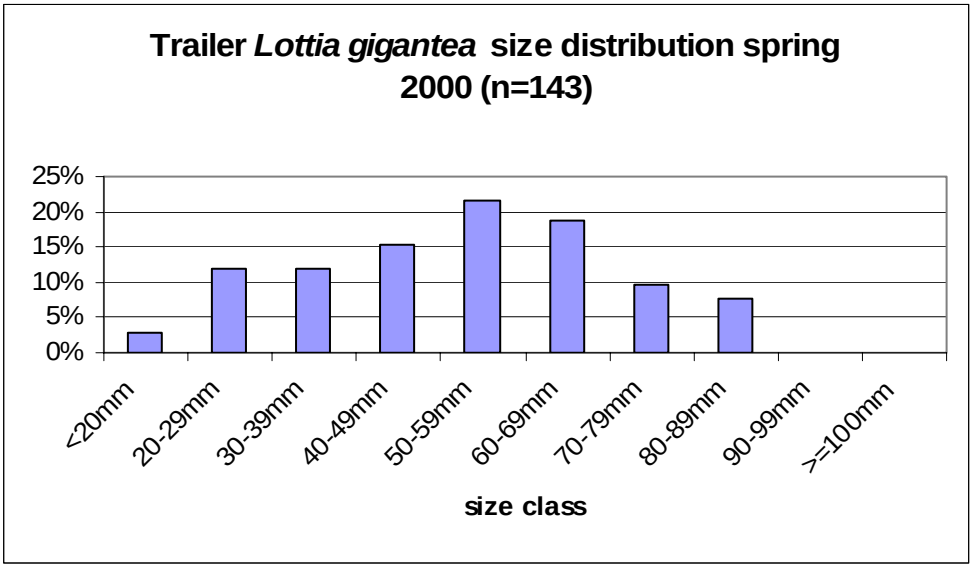
Site	Zone	Bare Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
TR	Barnacle	63.6	22.0	11.6	0.0	0.2	1.0	1.6	0.0
TR	Silvetia	11.0	0.2	0.4	82.6	0.0	5.6	0.2	0.0
TR	Mussels	15.0	1.8	0.6	0.0	54.2	15.4	13.0	0.0
TR	Hesperophycus	44.4	1.6	17.0	33.4	0.0	3.4	0.2	0.0

Owl limpets in fixed plots at Trailer

Plot	Count	MeanSize (mm)	StDev	MinSize	MaxSize	Density
1	29	64.66	18.03	21	87	9.233
2	29	57.21	17.84	27	88	9.233
3	22	47.86	19.67	16	83	7.004
4	43	46.02	11.22	17	67	13.690
5	20	42.55	17.38	18	74	6.367
total	**143**	**51.87**	**18.05**	**16**	**88**	**9.105**

Owl limpet size distribution in fixed plots at Trailer 4/11/00

Plot	%<20mm	%20-29mm	%30-39mm	%40-49mm	%50-59mm	%60-69mm	%70-79mm	%80-89mm	%90-99mm	%>=100 mm
1	0.00%	6.90%	3.45%	10.34%	13.79%	13.79%	27.59%	24.14%	0.00%	0.00%
2	0.00%	6.90%	20.69%	3.45%	13.79%	31.03%	13.79%	10.34%	0.00%	0.00%
3	9.09%	18.18%	9.09%	4.55%	18.18%	36.36%	0.00%	4.55%	0.00%	0.00%
4	2.33%	6.98%	11.63%	32.56%	37.21%	9.30%	0.00%	0.00%	0.00%	0.00%
5	5.00%	30.00%	15.00%	15.00%	15.00%	10.00%	10.00%	0.00%	0.00%	0.00%
total	**2.80%**	**11.89%**	**11.89%**	**15.38%**	**21.68%**	**18.88%**	**9.79%**	**7.69%**	**0.00%**	**0.00%**



Motile invertebrate counts in photoplots at Trailer.

Quadrat #	Tegula	Acanthina	Ocenebra	Nucella	Small Lottia Limpets	Fissurella	Lottia gigantea	Lepido-chitona	Nuttallina	Others
B1	0	0	0	0	0	0	0	0	0	0
B2	0	0	0	0	2	0	0	0	0	0
B3	0	0	0	0	0	0	0	0	0	0
B4	0	0	0	0	0	0	0	0	0	0
B5	0	0	0	0	2	0	0	0	0	0
He1	0	0	0	0	4	0	0	0	0	1 Pacr
He2	0	0	0	0	0	0	0	0	0	0
He3	0	0	0	0	3	0	0	0	0	0
He4	0	0	0	0	1	0	0	0	0	2 Pacr
He5	5	0	0	0	7	0	0	0	0	0
Pe1	16	3	0	0	0	0	0	4	0	1 Pacr
Pe2	17	2	0	0	5	0	0	2	0	0
Pe3	15	1	1	0	4	0	0	5	0	0
Pe4	10+1*	3	0	0	6	0	0	13	0	0
Pe5	55	5	0	0	2	0	0	1	0	0
M1	1	4	0	8	0	1	0	0	15	2 Pacr
M2	0	1	1	4	0	5	0	1	14	0
M3	0	1	1	3	2	2	1	2	27	1 Stpu
M4	0	0	0	1	0	2	1	2	8	1 Pacr
M5	1	0	0	9	0	2	2	0	5	0

(*=*Tegula gallina*, *T. funebralis* otherwise) Stpu=*Strongylocentrotus purpuratus*, Pacr=*Pachygrapsus crassipes*

Surfgrass Transects

Location Trailer **Site Code** SCTR
Date: 11-Apr-00
Recorders: Dan Richards

Surf Grass Taxa	Transect 1	Transect 2	Transect 3
Rock	4	4	1
Egregia menziesii	6	3	
Corallina vancouveriensis	8	2	8
Erect coralline	4		
Encrusting coralline			2
Chondracanthus canaliculatus	5	3	2
Chondracanthus spinosus	4	3	2
Prionitis spp.	1		4
Mazzaella affinis		1	
Mastocarpus sp.	1		
other red algae	4	8	3
Phyllospadix sp.	62	75	78
Phragmatopoma californica	1	1	
total	100	100	100

Fraser Cove, 4/12/00, tide –0.2 ft at 1228 hrs, air temp 21°C, water temp 13.5°C, Dense fog broke about 1100 hours to clear sky, wind calm, waves calm, surge mostly light with occasional 3-4 ft surf. On site from 0845-1400 hrs. Up to 18 Oystercatchers were observed at one time, at least one of which was a hybrid American/Black. Two Western Gulls, and one Willet were also present. A juvenile elephant seal was on the beach next to the site at Fraser. One harbor seal and a belted kingfisher were observed at Forneys Cove.

We worked at Forneys first, finishing the rockweed plots before moving to the Fraser Cove side. Both rockweeds were lush with *Silvetia* at 55-82% in the Silvetia plots and *Hesperophycus* at 9-45% cover in the Hesperophycus plots. *Endocladia* and some *Mastocarpus papillatus* was common in the rockweed plots. *Tegula funebralis*, *Lepidochitona hartwegii* and *Lottia pelta* were common in the plots.

Tar plots appear unchanged with *Porphyra perforata*, *Chthamalus* sp. and tiny *Littorina keenae* present in all plots and tar cover was 28-72%. *Endocladia* dominated the barnacle plots with 18-87% cover and only 1-26% barnacle cover. The Endocladia plots were lush with 50-96% cover of *Endocladia*. California mussels were patchy over part of the reef with 46 and 56% cover in plots M1 and M2 but 75-86% in the other three mussel plots. Juvenile mussels were mixed in with the larger individuals. Colonial *Anthopleura elegantisima* was abundant and tended towards domination of the mussel flats on the eastern portion of the site. Sandcastle worms were abundant, especially in the tidepools, but were never common in the photoplots.

Balanus glandula and *Chthamalus* sp. both appeared to have good recruitment and formed dense patches around the site. Coralline turf was mixed with the surfgrass below the mussel zone. Coralline turf was common in the surf grass transects. Transect G1 had considerable bare rock, while G3 was mostly surf grass. Most of the surfgrass appears healthy, though some bleaching with the mid-day low tides was occurring. The red alga, *Callithamnion pikeanum* was abundant.

Porphyra perforata was abundant in the owl limpet plots but this should not have affected the counts, which were quite low with only 56 total limpets recorded. (83 were recorded in May 1999, 85 in December 1999.) Two black abalone (73, 123 mm) and six ochre stars were found in a 30-minute search.

Photoplot summary – mean % cover by zone at Fraser Cove (5 plots/zone)

Site	Zone	Bare Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
FC	Barnacle	25.6	11.6	53.0	0.0	0.8	7.6	1.0	0.4
FC	Endocladia	8.4	3.0	74.8	5.6	0.0	8.0	0.2	0.0
FC	Silvetia	10.8	0.0	7.2	74.2	0.0	7.4	0.4	0.0
FC	Mussels	13.4	0.2	0.0	0.0	68.6	9.8	8.0	0.0
FC	Pollicipes	16.4	4.8	3.8	0.0	41.2	10.0	23.8	0.0
FC	Tar	27.8	11.8	0.0	0.0	0.0	13.4	0.0	47.0
FC	Hesperophycus	48.0	4.6	10.4	28.8	0.0	7.8	0.4	0.0

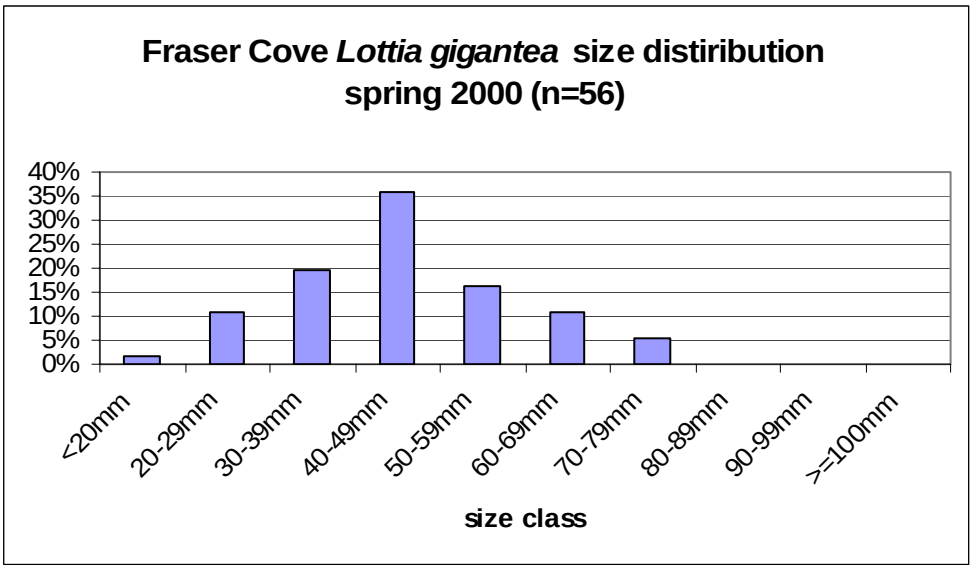
(Rockweed = *Hesperophycus* and *Silvetia* combined, data are separate in database)

Owl limpets in fixed plots at Fraser Cove

Plot	Count	MeanSize (mm)	StDev	MinSize	MaxSize	Density
1	13	52.38	16.98	15	78	4.139
2	6	59.17	10.50	45	73	1.910
3	10	40.60	9.25	23	60	3.184
4	13	34.23	8.29	21	47	4.139
5	14	46.14	9.88	28	60	4.457
total	**56**	**45.23**	**13.82**	**15**	**78**	**3.566**

Owl limpet size distribution in fixed plots at Fraser Cove 4/12/00

Plot	%<20mm	%20-29mm	%30-39mm	%40-49mm	%50-59mm	%60-69mm	%70-79mm	%80-89mm	%90-99mm	%>=100mm
1	7.69%	0.00%	7.69%	30.77%	23.08%	15.38%	15.38%	0.00%	0.00%	0.00%
2	0.00%	0.00%	0.00%	16.67%	33.33%	33.33%	16.67%	0.00%	0.00%	0.00%
3	0.00%	10.00%	30.00%	50.00%	0.00%	10.00%	0.00%	0.00%	0.00%	0.00%
4	0.00%	30.77%	38.46%	30.77%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
5	0.00%	7.14%	14.29%	42.86%	28.57%	7.14%	0.00%	0.00%	0.00%	0.00%
total	**1.79%**	**10.71%**	**19.64%**	**35.71%**	**16.07%**	**10.71%**	**5.36%**	**0.00%**	**0.00%**	**0.00%**



Motile invertebrate counts in photoplots at Fraser Cove

Quadrat #	Tegula	Acanthina	Ocenebra	Nucella	Sm. Lottia Limpets	Fissurella	Lottia gigantea	Lepido-chitona	Nuttallina	Others
E1	1	1	0	14	0	0	0	0	0	
E2	0	1	0	2	0	0	0	0	0	
E3	0	0	0	0	0	0	0	0	0	
E4	0	0	0	0	0	0	0	0	0	1 Pacr
E5	0	0	0	0	0	0	0	0	0	
He1	0	0	0	0	0	0	0	0	0	
He2	19	0	0	0	0	0	0	0	0	
He3	0	0	0	0	2	0	0	0	0	
He4	0	0	0	0	3	0	0	0	0	
He5	8	2	0	0	4	0	0	8	0	
Pe1	0	0	0	0	5	0	0	4	0	
Pe2	4	0	0	0	1	0	0	1	0	
Pe3	17	2	0	0	3	0	0	13	0	
Pe4	51	2	0	1	3	0	0	4	0	1 Pacr
Pe5	5	0	0	0	7	0	0	5	0	1 Pacr
B1	0	1	0	2	0	0	0	0	0	1 Pacr
B2	0	0	0	0	0	0	1	0	0	
B3	0	0	0	0	0	0	0	0	0	
B4	0	0	0	0	0	0	1	0	0	
B5	0	0	0	0	0	0	0	0	0	
M1	0	0	0	10	0	1	0	1	1	2 Pacr
M2	0	0	0	3	0	2	3	0	1	0
M3	0	0	0	14	0	0	2	0	0	1 Pacr
M4	0	0	0	4	0	0	1	0	2	2 Pacr
M5	0	0	0	5	0	0	0	0	1	3 Pacr
Po1	0	0	0	8	0	0	5	0	4	0
Po2	0	0	0	8	0	0	3	0	2	0
Po3	0	0	0	17	0	0	0	0	15	2 Pacr, 1 Momu
Po4	0	0	0	24	0	0	0	0	8	4 Pacr
Po5	0	0	0	26	0	0	0	0	6	4 Pacr
Ta1	0	0	0	0	0	0	0	0	0	0
Ta 2	0	0	0	0	0	0	0	0	0	0
Ta 3	0	0	0	0	0	0	0	0	0	0
Ta 4	0	0	0	0	0	0	0	0	0	0
Ta 5	0	0	0	0	0	0	0	0	0	0

Pacr= *Pachygrapsus crassipes*, Momu= *Mopalia muscosa*

Surfgrass Transects

Location: Fraser Cove		**Site code:** SCFC	
Date: 12-Apr-00			
Recorders: Dan Richards, Derek Lerma			
Surf Grass Taxa	Transect 1	Transect 2	Transect 3
Rock	16	5	2
Bryopsis sp.	1	1	
Egregia menziesii		1	
Endocladia muricata			1
Corallina vancouveriensis	18	7	4
Erect coralline	8	5	1
Encrusting coralline	2	4	2
Chondracanthus canaliculatus	2	4	3
Chondracanthus spinosus	4	4	
Porphyra perforata	1		1
Prionitis spp.		1	
other red algae			2
Gastroclonium sp.	4	1	1
Phyllospadix sp.	37	63	82
Mytilus californianus	4	3	
Anthopleura spp.	1	1	1
Phragmatopoma californica	2		
total	**100**	**100**	**100**

Willows Anchorage, 4/13/00, low tide –0.4 ft at 1321 hrs. Air temp 20°C, water temp 14.5°C, sky partly cloudy, wind light and variable strong west wind offshore, surge moderate. On site from 1000-1430 hrs. One harbor seal was in the area. There were no birds on the beach when we arrived but later we observed up to 24 Western Gulls, one Bonaparte's Gull, one Mew(?) Gull, two Black Oystercatchers, and one Raven (feeding on a stranded red sea urchin).

Hesperophycus californicus was not very common and Hesperophycus plot 1 was mostly bare rock with a little *Chthamalus* sp., a few small tufts of *Endocladia*, and some algal crusts. *Silvetia* cover was dense in patches but Pe1 and 2 had no rockweed and *Endocladia* dominated at 16% cover. Plots Pe 3 and 4 had 73% and 89% *Silvetia* cover respectively. *Endocladia* covered 11-38% of the Endocladia plots. California mussels covered 14-53% of the substrate in the mussel plots with up to 20% cover by leaf barnacles and 6-12% by sandcastle worms. Miscellaneous red algae were common with 25-33% cover. Small purple urchins were common in mussel plots as were the snail, *Nucella emarginata*, with as many as 31 counted in one plot. The small six-armed sea star, *Leptasterias hexactis* was present in several of the mussel plots.

Two black abalone (51 and 101 mm) were found in a 30-minute search. Seastars were abundant with 131 ochre stars found in 30 minutes along with 1 *Pisaster giganteus* and 2 *Asterina miniata*. A total of 93 owl limpets were found in the five plots. The owl limpets are small here with a maximum size of 60 mm.

Photoplot summary – mean % cover by zone at Willows Anchorage (5 plots/zone)

Site	Zone	Bare Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
WA	Endocladia	72.8	1.4	23.6	0.0	0.0	1.2	1.0	0.0
WA	Silvetia	33.4	0.0	10.2	35.4	0.0	17.4	3.4	0.2
WA	Mussels	16.6	3.4	0.0	0.0	32.8	29.2	18.0	0.0
WA	Hesperophycus	66.8	0.6	4.0	17.0	0.2	9.6	1.8	0.0

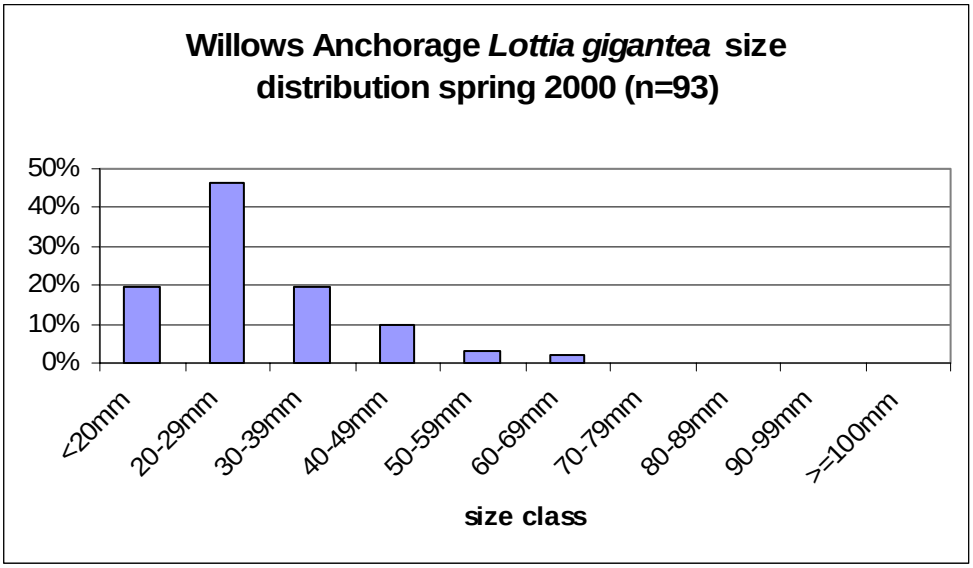
(Rockweed = *Hesperophycus* and *Silvetia* combined, data are separate in database)

Owl limpets in fixed plots at Willows Anchorage

Plot	Count	MeanSize (mm)	StDev	MinSize	MaxSize	Density
1	10	28.60	10.93	15	54	3.184
2	12	26.83	9.54	15	48	3.820
3	32	26.59	9.35	15	47	10.188
4	25	30.84	12.52	15	60	7.959
5	14	28.29	12.78	15	60	4.457
total	**93**	**28.24**	**10.91**	**15**	**60**	**5.922**

Owl limpet size distribution in fixed plots at Willow Anchorage 4/13/00

Plot	%<20mm	%20-29mm	%30-39mm	%40-49mm	%50-59mm	%60-69mm	%70-79mm	%80-89mm	%90-99mm	%>=100mm
1	20.00%	40.00%	30.00%	0.00%	10.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2	16.67%	66.67%	0.00%	16.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
3	28.13%	43.75%	15.63%	12.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
4	8.00%	44.00%	28.00%	8.00%	8.00%	4.00%	0.00%	0.00%	0.00%	0.00%
5	21.43%	42.86%	21.43%	7.14%	0.00%	7.14%	0.00%	0.00%	0.00%	0.00%
total	**19.35%**	**46.24%**	**19.35%**	**9.68%**	**3.23%**	**2.15%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**



Motile invertebrate counts in photoplots at Willows Anchorage.

Quadrat #	Tegula	Acanthina	Ocenebra	Nucella	Sm. Lottia Limpets	Fissurella	Lottia gigantea	Lepido-chitona	Nuttallina	Others
E1	0	0	0	0	0	0	0	0	0	0
E2	0	0	0	0	0	0	0	0	0	0
E3	0	0	0	0	0	0	0	0	0	0
E4	0	0	0	0	0	0	0	0	0	0
E5	0	0	0	0	0	0	0	1	0	0
He1	0	0	0	0	0	0	0	0	0	0
He2	0	1	0	0	5	0	0	0	0	0
He3	0	0	0	0	4	0	0	1	0	0
He4	0	7	0	0	8	0	0	4	0	1 Pacr
He5	0	2	0	0	11	0	0	1	0	0
Pe1	0	1	0	0	5	0	0	1	0	0
Pe2	0	2	0	0	10	0	0	2	1	1 Pacr
Pe3	0	0	0	9	7	0	0	10	0	1 Pacr
Pe4	0	4	0	3	2	0	0	3	0	0
Pe5	2	2	0	2	15	0	0	0	0	1Pacr
M1	0	0	0	31	0	1	3	0	18	3 Stpu, 2 Pacr
M2	0	0	0	11	0	2	2	0	7	28 Stpu, 1 Lehe
M3	0	0	0	19	0	1	3	0	3	21 Stpu, 2 Pacr, 3 Lehe
M4	0	0	0	19	0	2	2	0	4	11 Stpu, 2 Pacr, 3 Lehe, 1 Amve
M5	0	2	0	19	0	0	1	0	4	3 Stpu, 5 Pacr

Stpu=*Strongylocentrotus purpuratus*, Pacr=*Pachygrapsus crassipes*, Lehe=*Leptasterias hexactis*, Amve=*Amphissa versicolor*

Santa Cruz Island, April 27 and 28, 2000 (Database event #2000-B)

PERSONNEL: Dan Richards, Marine Biologist, Channel Islands National Park
Derek Lerma, Biological Technician, Channel Islands National Park

PROCEDURE: Utilized Island Packers to access Santa Cruz Island on an off day for regular park transportation. Arrived Scorpion Anchorage at 1100 and immediately prepared equipment and loaded it on a kayak to paddle to Scorpion Rock. Arrived Scorpion Rock location B at 1130 as the tide was still dropping and immediately photographed and scored Hesperophycus photoplots. Moved to Scorpion Rock location A and concluded the remainder of the sampling before paddling back to Scorpion Anchorage at 1500. The next morning the OCEAN RANGER arrived to drop off personnel and transport Dan Richards and myself to Orizaba Cove. A full transportation schedule limited our time sampling at Orizaba Cove. We arrived on site at approximately 1230 and finished what we could until departing at 1400. Dan made a dive at Prisoner's harbor to survey the surfgrass beds near the pier. Conditions were poor for diving and skiff landings were difficult and wet.

RESULTS:
Scorpion Rock, 04/27/2000, low tide 0.4 ft at 1222 hrs, air temp. 19.0°C, water temp. 15°C, skies overcast to clearing, wind 3-5 mph SE, waves 2ft., and light surge. Western Gulls, Cormorants, and California Brown Pelicans were common on Scorpion Rock with some gull nests visible from location B. Several Barn Swallows were observed in and around the cliffs at location A. No marine mammals were observed at either location.

Conditions were calm and plots fully exposed. Hesperophycus plots all contained healthy assemblages of macro algae. Rockweed cover ranged from 31- 75% with both *Hesperophycus* and *Silvetia* present. *Endocladia muricata* was abundant and healthy throughout location B but only common at location A. Little time was spent looking around at location B in order to complete the full array of sampling at the remainder of the site. Photoplots were photographed and scored at location A, sampling plots lower in the tide range first. Barnacle plots appeared healthy with average cover in plots near 60%. A 30-minute search for seastars was performed covering the entire reef counting 26 *Pisaster ochraceus*, in location A only. General species census was performed for 10 minutes and in conjunction with the seastar search and photoplot scoring. Unusual sightings included *Corynactis californica* and *Tethya aurantia*, typically subtidal species. Mussel plots 818 and 819 recently had sections of rock break off within the photoplot grids. Both plots could have sustained disturbance from a boat or skiff but more likely winter storms weakened and dislodged the shale rock. The UCSB Gaines Lab temperature logger was missing and bracket broken.

Mean %cover for photoplots at Scorpion Rock, Santa Cruz Island (5 Plots/zone)

Zone	Bare Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal
Barnacle	60.6	18.4	20.2	0.0	0.0	0.8	0.0
Endocladia	49.4	11.4	18.4	0.0	1.2	17.8	1.8
Mussels	12.6	3.0	0.2	0.0	73.2	4.4	6.6
Tetraclita	49.2	11.4	2.8	0.0	22.0	8.2	6.4
Hesperophycus	15.4	0.4	26.0	49.2	0.0	8.6	0.4

*** Rockweed represents both *Silvetia* and *Hesperophycus* combined

Orizaba Rock, 04/28/2000, low tide 0.3 @ 1303 hrs, clear skies, wind 25+ mph NW, and surge moderate. Two harbor seals were observed in the water just off the site, one was a pup. Three Black Oystercatchers were observed in the cove opposite of the sampling site.

Conditions within the cove were calm and pleasant. Vegetation along the trail between locations was overgrown. Minor pig routing was evident on the slope above the sampling site and evidence of a dog ashore (footprints) was observed. Only limited time for sampling was available because of the full

transportation schedule. *Hesperophycus* and *Silvetia* percent cover was very low, although several small individual plants were observed. It appears that either there is good re-growth from the holdfasts or there was good recruitment of sporelings. Thatched barnacle cover in Tetraclita plots averaged near 50 % and most individuals were large. Mussel and Tetraclita plots appeared healthy with some patches recently disturbed, likely from seasonal storm activity. Dense patches of young (1-2 year old?) mussels were common. Field scoring of photoplots was done at only half the plots due to time constraints. Seastars were counted in a 20-minute search covering the reef from just east of the mussel plots to the middle of the cove. Two giant-spined stars and 16 ochre stars were counted during the search. *Endocladia muricata, Balanus glandula* and *Tetraclita rubescens* were common in the Hesperophycus plots.

Mean %cover for photoplots at Orizaba Rock, Santa Cruz Island (5plots/zone) (Rockweed represents both Silvetia and Hesperophycus combined)

Zone	Bare Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
Barnacle	44.8	48.2	0.6	0.0	0.2	5.8	0.4	0.0
Rockweed	57.0	16.0	0.6	5.8	1.8	17.4	1.4	0.0
Mussels	13.6	4.0	0.0	0.0	65.6	10.8	6.0	0.0
Tetraclita	41.6	39.6	1.0	0.0	3.6	11.0	2.8	0.4
Hesperophycus	55.4	7.4	22.8	3.6	0.2	9.2	1.4	0.0

Anacapa Island, May 5-8, 2000 (Database event #2000-C)

PERSONNEL: Dan Richards, Marine Biologist, Channel Islands National Park

PROCEDURE: Transported out to Anacapa via Island Packers Company and kayaked gear and myself ashore at Middle Island. I camped on Middle Anacapa Island because of the early morning tides and weekend making day transportation impossible. The kayak was used to transit to West Island. Standard monitoring was performed according to the Monitoring Handbook. Pinniped and shorebird counts were done, slides of all the photoplots were shot, general species lists were made, owl limpets were measured in plots at South Frenchy's Cove, searches for seastars and abalone were made. Photoplots were censused for species and motile invertebrates were counted. RPC's of photoplots at Middle-West were scored in the field. GPS mapping of Middle-West, Harbor Seal Arch and South Frenchy's Cove was completed with reef outlines and all plots.

General notes: The kayak could not be used to access Middle-East, at least in the sea conditions encountered. The steep wall there makes landing on the small reef all but impossible from a closed cockpit kayak. The reef cannot be approached safely from shore because of sheer walls and loose soil. A boat was observed on 5/6 anchored within the pelican closure. Three personal watercraft were observed over the weekend working in and out of the coves along Middle Island, very close to shore. A Hobie-Cat sailed into Frenchy's Cove on 5/6 feeling it was too rough to continue to Santa Cruz Island and camped until requested to return on Island Packers on 5/8. Many boats were around Anacapa over the weekend, mostly fishing. Six boats were observed at Frenchy's Cove on Sunday afternoon and parties from three were ashore.

RESULTS:

May 5, 2000 Middle Anacapa-West, tide +1.3 ft at 1556 hrs, wind NW at 10 mph, waves 1-2 ft, surge light. Arrived at 1530 hrs. On site 1530-1630 hrs. Three Black Oystercatchers were observed in the intertidal. Western gulls were numerous in the area with many active nests around the landing. Though the tide was not very low, I was able to score RPCs and count invertebrates in the upper three zones.

The rockweed plots all contain *Silvetia compressa* only. *Endocladia* muricata was present in all the rockweed plots. *Endocladia* was common in all the barnacle zone plots*. Balanus glandula* was the most common acorn barnacle. Thatched barnacles, *Tetraclita rubescens*, common in lower zones including one Endocladia plot but rare in barnacle plots. *Ulva* sp. was especially common in barnacle plots 448 and 449. The invertebrate counts seemed lower than remembered at Santa Cruz Island, however, a brief comparison seems like there may not be that much difference zone by zone. *Acanthina* sp. were present in 16 of the 20 plots and shore crabs were present in most of the lower plots. All were very small however. Hermit crabs were not common and Littorina snails were small and not very common.

Photoplot summary – mean % cover by zone at Middle Anacapa (West) (5 plots/zone)

Site	ZoneName	Bare Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
MW	Barnacle	20.6	17.0	29.2	2.0	0.2	30.4	0.6	0.0
MW	Endocladia	26.6	9.8	37.6	1.6	4.0	19.0	1.4	0.0
MW	Rockweed	17.8	3.4	6.2	52.6	2.0	15.0	3.0	0.0
MW	Mussels	17.4	4.8	1.4	0.0	62.4	12.0	2.0	0.0

ANMW Motile Invertebrates Spring 2000

zone	Barnacle					Endocladia					Silvetia					Mytilus				
plot #	447	448	449	450	451	457	458	459	460	461	452	453	454	455	456	462	463	464	465	466
Lepidochitona spp.			1			2	1	1	2				1			1	1	1		
Nuttalina spp.		3			5	17	7	8	1		1	1	1	2	1	7	25	26	8	
Fissurella volcano						1							1				2	1	3	
Pachygrapsus					1	3	1	2	2	2	3		2			3	1	3	2	2
Mopalia muscosa															1					
large limpets(>10mm)								7					3		1				3	5
S. purpuratus													2							
Nucella emarginata																2		1	4	
Acanthina spp.		5	4	4	1	5	4	3	2		1	2		2	3		5	2	2	1
nuttali																	1			
Ocenebra circumtexta						1	1							4		3		2	3	1
Lottia gigantea		1				1	9								5	3	1	1	4	2
Littorina spp.	>200	17	61	>100	27	1	28	2	39	>200	7	1								
Haliotis cracherodii												1								

May 6, 2000- **South Frenchy's Cove**, tide –1.0 at 0618 hrs, air temp 24°, water temp 15.6°, wind calm, seas 1-2 ft with 3-4 ft swell making the surge moderate. On site 0630-1030 hrs. It took approximately 45 minutes to paddle over to West Island and get to the site. Three Black Oystercatchers were present and one female surf scoter was on the beach when I arrived.

The rockweed plots had good *Silvetia compressa* cover except plot 262, which was mostly bare rock. *Hesperophycus californicus* was uncommon in most photoplots but over all was considered common. *Silvetia* and some *H. californicus* were present in most of the Endocladia plots. *Chthamalus* sp. were abundant and *Balanus* were common. No changes were noticed in the mussel plots where *Corallina vancouveriensis* and other turf algae were common. Mussel plot 201 was mislabeled 202 on the last repair. No time for repairs this trip.

A total of 54 owl limpets were in the three plots with sizes ranging from 16-64 mm. *Porphyra perforata* had abundant growth in plots 1 and 2. Because of the incoming tide and priority of GPS mapping very little time was spent on a general species list beyond the photoplot census.

The afternoon tide was workable from 1530-1715 hrs though the conditions were rougher and wetter than on 5/5. GPS mapping was done and photos were shot with the exception of the mussel zone.

Photoplot summary – mean % cover by zone at South Frenchy's Cove (5 plots/zone)

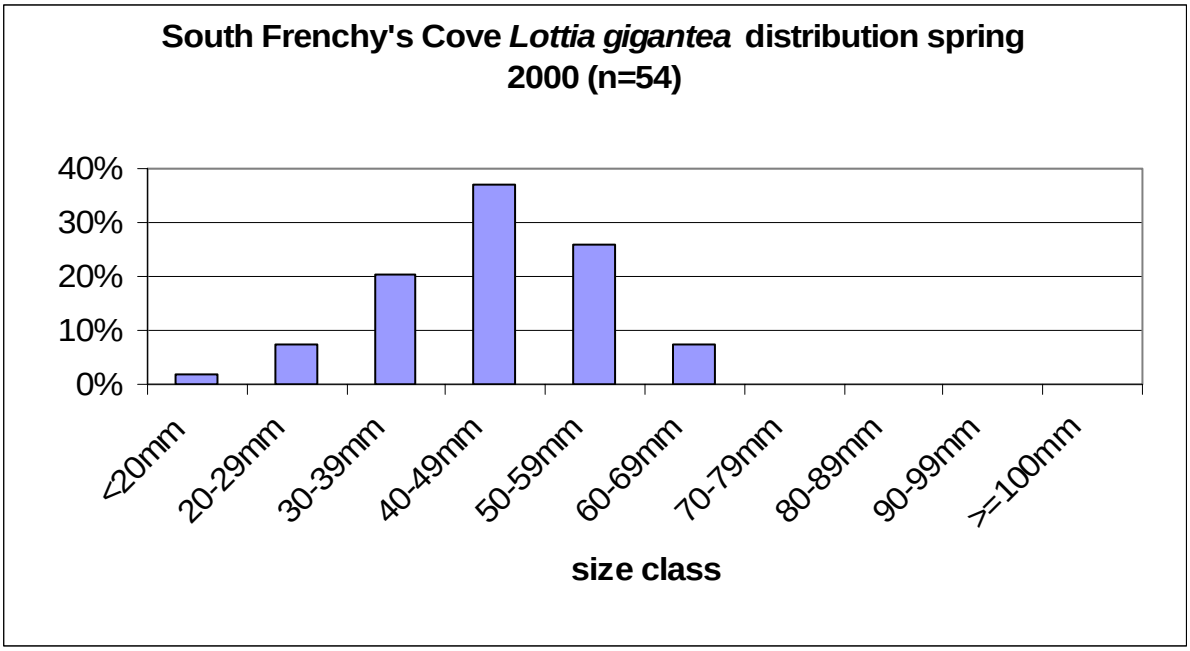
Site	ZoneName	Bare Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
SFC	Barnacle	55.0	21.2	21.0	0.0	0.0	2.4	0.0	0.4
SFC	Endocladia	13.4	0.6	66.2	16.6	0.0	3.2	0.0	0.0
SFC	Rockweed	21.0	4.6	2.2	65.6	0.0	6.6	0.0	0.0
SFC	Mussels	12.2	3.0	6.6	0.0	44.4	33.0	0.8	0.0

ANSFC Motile Invertebrates Spring 2000

zone	Barnacle						Endocladia				Silvetia					Mytilus				
plot #	249	250	251	252	253	154	155	256	257	258	259	260	261	262	263	201	202	264	265	266
Nuttalina spp.																			1	
Fissurella volcano																	1			
Pachygrapsus					1												1			
Mopalia muscosa										1										
large limpets(>10mm)											1		4		3					
Acanthina spp.								1			3		5					1		
Lottia gigantea				1								1								1
Littorina spp.	>100	>100	>100	>100	>100	<100	<100	<100	<100		>10			<100						

Owl limpet plot summaries at South Frenchy's Cove, May 2000

Site	Plot	Count	Mean Size (mm)	StDev	Min Size	Max Size	Density	%<20mm	%20-29mm	%30-39mm	%40-49mm	%50-59mm	%60-69mm	%>=70mm
SFC	1	20	47.5	10.0	25	60	6.4	0%	10%	5%	30%	45%	10%	0%
SFC	2	23	38.2	8.6	16	60	7.3	4%	9%	39%	39%	4%	4%	0%
SFC	3	11	49.3	9.1	30	64	3.5	0%	0%	9%	45%	36%	9%	0%



May 7, 2000 Middle Anacapa-West-tide –0.9 ft at 0716 hrs, air temp 16°, water temp 14.5°, light high cloud cover, wind NW at 20 mph, waves 2-3 ft with heavy surge. On site 0700-1000 hrs. One Black Oystercatcher present. The wind was blowing all night and conditions were too rough to paddle to West Island, so worked Middle Anacapa West again.

A thirty-minute search was conducted of the entire reef and 107 *Pisaster ochraceus* and four *P. giganteus* were found. No abalone were found. The temperature shuttle went to Santa Rosa Island with Derek, so the loggers were not downloaded.

May 8, 2000 Harbor Seal Arch –tide –0.6 ft at 0821 hrs, Wind NW 15 mph, waves 2 ft, surge moderate. On site 0700-0830 hrs. Three Black Oystercatchers, no harbor seals though they were seen on other days. Western Gulls and Cormorants were common on the slopes above intertidal zone.

Abalone plots 300-302 were not GPS mapped because of insufficient satellites acquired next to the cliffs and arch where the plots are located. The western reef outline was mapped along with the other two abalone plots; however. No abalone were found in a search of the entire reef area. Purple urchins were common. Algae, particularly *Egregia menziesii* and *Sargassum muticum* were lush. Sandcastle worms, *Phragmatopoma californica*, dominated most of the abalone plots. Species noted here but not present at Middle –West: *Smithora naiadum, Aplysia californica, Hopkinsia rosacea, Dodecaceria fewksii, Tegula funebralis, Lottia digitalis,* and *Scytosiphon lomentaria*. Both *Phyllospadix* species were present. Surfgrass was rare at the other site.

Santa Rosa Island, May 6-10, 2000 (Database event #2000-D)

PERSONNEL: Derek Lerma, Biological Technician, Channel Islands National Park
David Kushner, Marine Biologist, Channel Islands National Park
Dan Martin, Marine Biologist, Dauphin Island Marine Lab (Alabama)
Dave Steichen, Validation Specialist, Independent Contractor

PROCEDURE: We departed Channel Islands Aviation 1600 hrs., arrived Santa Rosa Island 1630 hrs. then proceeded to housing site to unload and prepare for the early morning tide. Minus tides occurred early in the morning all week prompting 0500 departures from the housing site each sampling day. The first day of sampling, May 7th, was performed at Fossil Reef starting just after sunrise. No photo stand was used for plot photographs at this site. Conditions were optimal and Elephant Seal surveys were performed from the sampling site to Sandy Point, counts were the highest ever obtained for this area. One decayed Risso's Dolphin *Grampus griseus* and one dead sealion were observed on the far east end of Sandy beach. Similar conditions were encountered the following day at Northwest Talcott with heavy fog making early morning navigation difficult. *Castillea mollis* was in full bloom on the upper beach terrace, with an estimated 2000 plants observed. David Kushner found a container with a commercial fishing license and notes in it and turned it over to the island ranger. The small boat previously observed at this site had moved east and broken up even more. On May 9th both Johnson's Lee and Ford Point were sampled on the same tide. Winds had increased to 25-35 mph and a large south swell was present. On the final day East Point was sampled as the tide went out in order to catch the afternoon boat. Winds were 35+ mph and large aggregations of cormorants, pelicans and western gulls were observed at the site on arrival. The sampling crew searched for fireweed and hiked several watersheds after the completion of daily sampling. Riparian areas appear to be recovering very well with water clarity good and several associated species observed. Departed via the Ocean Ranger at 1200, arriving at headquarters at 1500.

At all sites, birds and pinnipeds were counted, photoplots were photographed and scored in the field, all species in photoplots were censused and motile invertebrates over one centimeter were counted. Owl limpet plots were completed where present. A 30-minute search for sea stars and abalone were done at each site, except Ford Point and Johnson's Lee. Physical parameters were measured and noted at each site and temperature loggers down loaded were present. Data sheets were checked and notes completed each evening.

RESULTS:

Fossil Reef, 5/7/00, Low tide –0.9 ft at 0725 hrs, air temp 15.0°C, water temp. 12.0°C, clear sky, winds 15 mph from the NW, waves 5-6ft, surge moderate. On site 0645-1030 hrs. Counted Elephant seals from 1030-1200. Seven Black Oyster Catchers and five Western Gulls were observed on site one Great Blue Heron and two Pelagic Cormorants were sighted flying in the vicinity. One harbor seal and five Northern Elephant seals were observed swimming next to the reef.

The tide was extremely low on arrival and conditions were good even with a large swell present. The Silvetia zone was in fair to poor condition with the majority of plants large and weathered. *Endocladia muricata* was common over the whole site but rare in plots, 9.6% within Endocladia zone. Mussel plots continue to be dominated by *Phragmatopoma californica* and miscellaneous algae. Some mussel recruitment was observed. *Strongylocentrotus purpuratus* was common in the low-lying areas and tidepools with most individuals large in size, estimated to be greater than 40mm. Barnacle cover was patchy and overall low at 30.2 % cover within the barnacle zone. A 30-minute search of abalone was performed finding 17 individuals ranging in size from 67 to 151 mm. A 30 meter seastar transect was done finding 17 *Pisaster ochraceus*, relatively low for this site.

Ulva sp. was common in the low intertidal and *Cladophora columbiana* common in the mid tide area. *Tegula funebralis* was abundant. Northern Elephant seals were counted starting just north of the site and moving north to Sandy Beach, approximately 2400 Elephant seals were counted along with 66 adult and pup harbor seals. No observations were made south of the monitoring site. Most Elephant seals were molting females and subadult males.

Photoplot summary – mean % cover by zone at Fossil Reef (5 plots/zone) (Rockweed = *Hesperophycus* and *Silvetia* combined, data are separate in database)

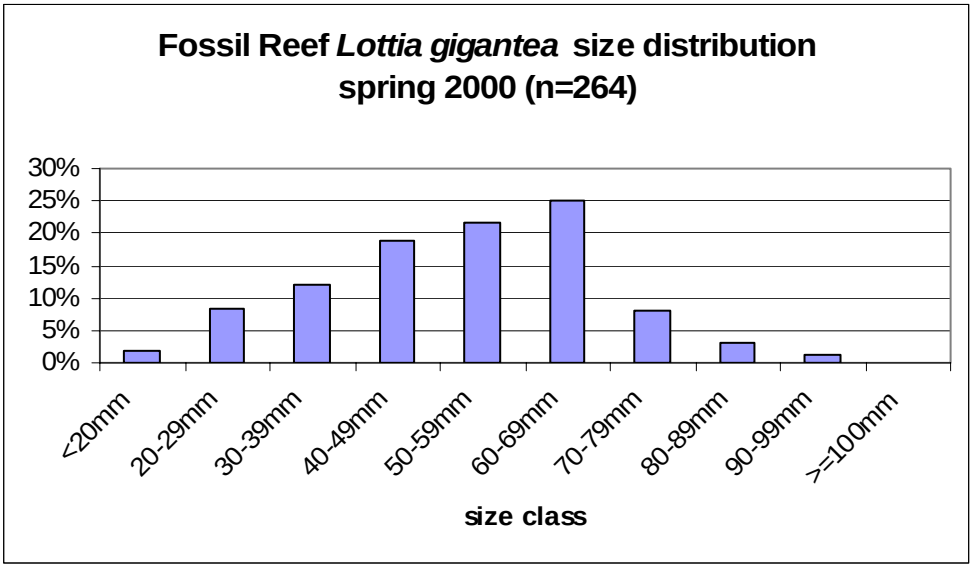
Zone	Bare Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
Barnacle	66.8	30.2	0.4	0.0	0.0	0.0	1.4	1.2
Endocladia	37.8	17.8	9.6	31.8	0.0	1.4	1.6	0.0
Rockweed	74.4	8.2	3.8	9.8	0.0	1.6	2.2	0.0
Mussels	12.0	6.8	1.0	0.0	18.4	29.4	32.4	0.0

Owl Limpet *Lottia gigantea* plots. Size summary at Fossil Reef

Plot	Density	Mean Size (mm)	StDev	MinSize	MaxSize
1	7.959	55.72	16.93	16	80
2	10.188	48.22	15.24	17	73
3	13.053	63.78	18.38	28	95
4	24.514	55.31	13.71	16	84
5	28.335	46.12	13.85	21	73

Owl Limpet *Lottia gigantea* size distribution within plots at Fossil Reef

Plot	%<20mm	%20-29mm	%30-39mm	%40-49mm	%50-59mm	%60-69mm	%70-79mm	%80-89mm	%90-99mm	%>100mm
1	8.00%	4.00%	4.00%	12.00%	20.00%	36.00%	12.00%	4.00%	0.00%	0.00%
2	6.25%	6.25%	12.50%	25.00%	21.88%	21.88%	6.25%	0.00%	0.00%	0.00%
3	0.00%	2.44%	9.76%	14.63%	9.76%	21.95%	19.51%	14.63%	7.32%	0.00%
4	1.30%	3.90%	7.79%	19.48%	23.38%	35.06%	7.79%	1.30%	0.00%	0.00%
5	0.00%	16.85%	19.10%	20.22%	25.84%	15.73%	2.25%	0.00%	0.00%	0.00%



SRFR SPRING 2000 Motile Invertebrate Count

zone	Barnacle					Endocladia					Mussels					Silvetia				
plot #	605	606	607	608	609	610	611	612	613	614	620	621	622	623	624	615	616	617	618	619
Lepidochitona spp.								14	1	9								1		
Nuttalina spp.											31	46	38	16	4					
Fissurella volcano												1		1						
Pachygrapsus					2								1							
large limpets(>15mm)		1	4		4	3		9	7	7		1	3	2		5	6	9	1	4
S. purpuratus											19	9	3	6	10					
Nucella emarginata											2	3	1	3						
Acanthina spp.			1		1		3	4	8	1									1	
Tegula funebralis						3	2	48	6	97						1	27	6	23	2
Ocenebra circumtexta										1										
Lottia gigantea													5							
Henricia sp.															1					

Northwest Talcott, 5/8/00, Low tide –0.7 ft at 0830 hrs, air temp 16.5°C, water temp. 13.0°C, Heavy fog, winds 5-10 mph from the NW, waves 3ft, surge light. On site 0700-1100 hrs. Four Western Gulls, three Cormorants, and two Pelicans were sighted flying in the vicinity. Cormorants, Western Gulls and Pelicans were observed at the access point but thick fog obscured accurate counts. Seven harbor seals, one sealion and five Northern Elephant seals were observed swimming adjacent to the reef.

Silvetia compressa was abundant and healthy and *Hesperophycus californicus* was observed, but not within plots. *Endocladia muricata* was abundant but patchy. Barnacles had good cover, approximately 40% in three of the five plots within that zone and throughout the site. Mussels were patchy and no new recruitment was observed. Both *Phyllospadix* spp. were observed and bleaching was common at the site. Several subtidal species were noted including *Aplysia vaccaria*, *Pisaster giganteus*, *Megathura crenulata*, and *Macrocystis pyrifera*. *Ulva* sp. was abundant throughout the lower intertidal and sponges in the mid-tide areas. Sand levels were high near the channels adjacent to plots 560 and 565. In the case of plot 560 both bottom corners were covered. *Tegula funebralis* were abundant and various sizes were represented. Limpets were common and diverse with at least six species noted. Large individuals dominated *Lottia gigantea* plots. The temperature logger downloaded but appeared full and not collecting data when the data was transferred.

Photoplot summary – mean % cover by zone at Northwest Talcott (5 plots/zone)

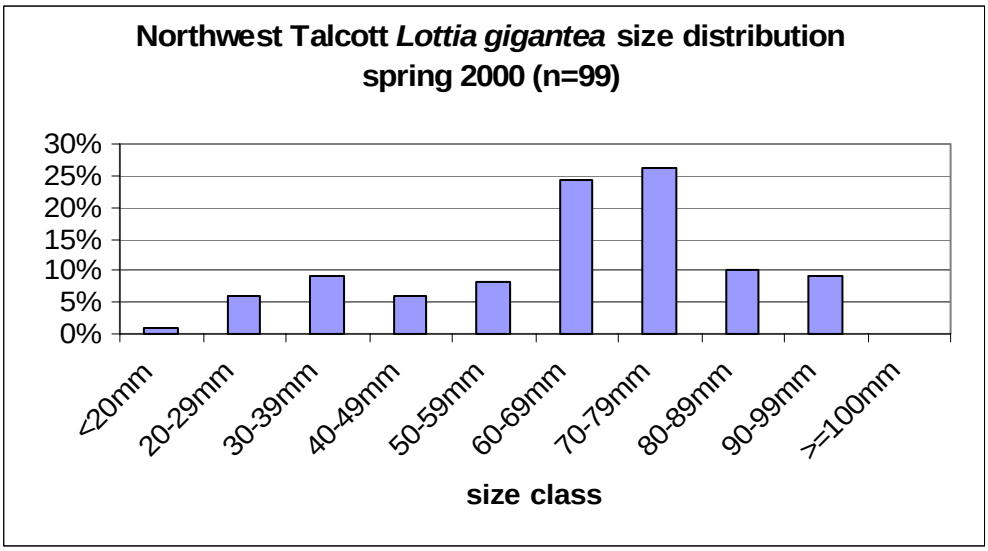
Zone	Bare Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
Barnacle	55.6	27.0	2.6	12.6	0.0	0.8	0.4	1.0
Endocladia	39.0	6.8	25.0	22.4	0.0	6.4	0.4	0.0
Rockweed	32.0	0.0	7.6	55.6	0.0	3.8	1.0	0.0
Mussels	23.2	3.6	0.0	0.0	52.4	11.8	9.0	0.0

Owl Limpet *Lottia gigantea* plots. Size summary at Northwest Talcott

Plot	Density	Mean Size (mm)	StDev	MinSize	MaxSize
701	7.004	75.86	19.59	23	98
702	5.094	78.06	9.39	66	96
703	8.278	55.69	19.21	19	80
704	5.094	64.63	16.26	27	84
705	6.049	51.74	15.82	30	77

Owl Limpet *Lottia gigantea* size distribution within plots at Northwest Talcott

Plot	%<20mm	%20-29mm	%30-39mm	%40-49mm	%50-59mm	%60-69mm	%70-79mm	%80-89mm	%90-99mm	%>100mm
701	0.00%	9.09%	0.00%	0.00%	4.55%	9.09%	27.27%	22.73%	27.27%	0.00%
702	0.00%	0.00%	0.00%	0.00%	0.00%	25.00%	43.75%	12.50%	18.75%	0.00%
703	3.85%	11.54%	7.69%	11.54%	11.54%	23.08%	26.92%	3.85%	0.00%	0.00%
704	0.00%	6.25%	0.00%	12.50%	12.50%	25.00%	31.25%	12.50%	0.00%	0.00%
705	0.00%	0.00%	36.84%	5.26%	10.53%	42.11%	5.26%	0.00%	0.00%	0.00%



SRNWT spring 2000 Motile Invertebrate Counts

zone	Barnacle					Endocladia					Silvetia					Mytilus				
plot #	560	561	562	563	564	555	556	557	558	559	565	566	567	568	569	550	551	552	553	554
Lepidochitona spp.			1	4				2			1	2						1		
Nuttalina spp.																8	9	7	18	27
Fissurella volcano			1													2	8			4
Pachygrapsus		1		1		1					1	1	2			2		4	3	3
large limpets(>15mm)		1	2	4						9	5	2	5				2	2	2	6
Nucella emarginata									4				2			3	5	4	2	4
Acanthina spp.				1		1	1	4		2										
Tegula funebralis			1	1				4				9	11							
Ocenebra circumtexta									1							5		2		1
Lottia gigantea										4					2	6	3	8	7	1
Mopalia sp.													1							

Johnson's Lee, 5/9/00, Low tide –0.5 ft at 0943 hrs, air temp 18.0°C, water temp. 12.0°C, Clear skies, winds 15-25 mph from the NW, waves 3ft, surge moderate. On site 0645-0900 hrs. Two Black Oystercatchers and no marine mammals were observed on site.

Arrived on site as the tide was still dropping and conditions barely workable. Large south swells 4-6 ft. were consistently breaking on the work area. Barnacle plots appeared healthy and cover averaged 44%. *Endocladia muricata* was abundant and healthy. Mussel plots varied from near 100% mussel coverage to miscellaneous invertebrate dominated, typical for this site. *Nucella emarginata* was abundant and occurred in nearly all motile invertebrate plot counts. *Pollicipes polymerus* was common. *Phragmatopoma californica* was abundant but patchy with several areas recently disturbed. *Ulva* sp. was common in the mid tide area and abundant in the lower areas. Sand deposition partially filled the large tide pool that divides the site and urchin densities were low and associated species rare. Sand scouring appears to have impacted plots throughout the adjacent area plots 513, 514 and 505. Owl limpets (*Lottia gigantea*) were common in plots and sizes ranged from 20 to 70 mm in nearly all plots. Owl limpet densities appeared healthy and recruitment was observed. Downloaded the temperature unit successfully but the unit appeared full when it was removed. Abalone and seastar counts were not performed due to lack of time and a rising tide in order to complete work at Ford Point.

Photoplot summary – mean % cover by zone at Johnson's Lee (5 plots/zone)

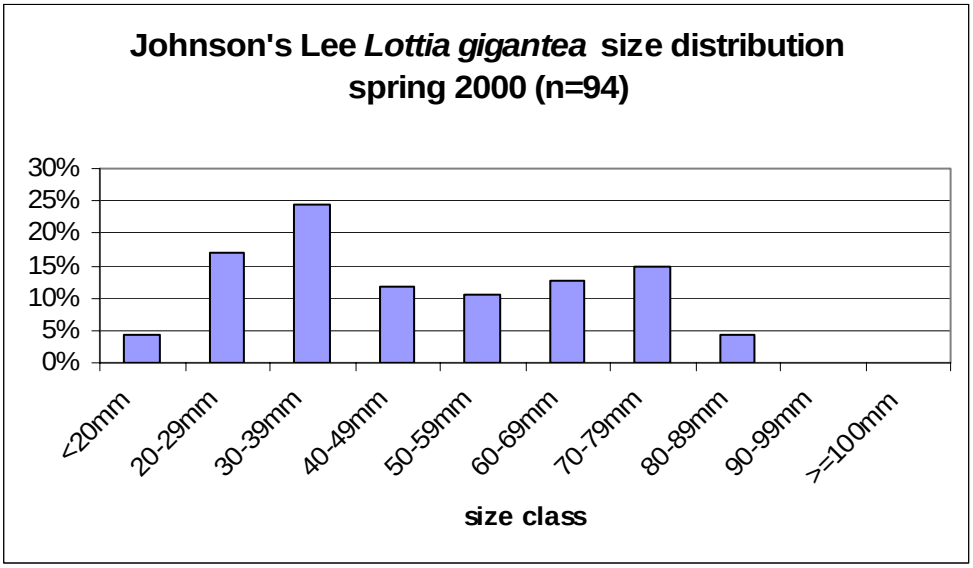
Zone	Bare Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
Barnacle	47.0	44.0	8.2	0.0	0.0	0.2	0.6	0.0
Endocladia	34.4	3.6	48.4	0.0	11.6	0.8	1.2	0.0
Mussels	13.8	2.6	0.0	0.0	17.6	23.0	43.0	0.0

Owl Limpet *Lottia gigantea* plots. Size summary at Johnson's Lee

Plot	Density	Mean Size (mm)	StDev	MinSize	MaxSize
595	2.547	43.00	15.11	27	62
596	5.094	64.50	16.06	30	82
597	1.910	47.67	19.54	22	72
598	9.233	46.38	20.21	21	87
599	11.143	40.03	16.17	16	70

Owl Limpet *Lottia gigantea* size distribution within plots at Johnson's Lee

Plot	%<20mm	%20-29mm	%30-39mm	%40-49mm	%50-59mm	%60-69mm	%70-79mm	%80-89mm	%> 90mm
595	0.00%	37.50%	12.50%	12.50%	12.50%	25.00%	0.00%	0.00%	0.00%
596	0.00%	0.00%	12.50%	6.25%	6.25%	12.50%	50.00%	12.50%	0.00%
597	0.00%	16.67%	16.67%	16.67%	16.67%	16.67%	16.67%	0.00%	0.00%
598	0.00%	27.59%	20.69%	13.79%	6.90%	10.34%	13.79%	6.90%	0.00%
599	11.43%	11.43%	37.14%	11.43%	14.29%	11.43%	2.86%	0.00%	0.00%



SRJL spring 2000 Motile Invertebrate Counts

zone	Barnacle					Endocladia					Mussel				
plot #	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514
Lepidochitona spp.															
Nuttalina spp.											4		1	15	
Fissurella volcano												1		3	1
Pachygrapsus												2		1	
Limpets (>1cm)					2			4	5	3			2	3	
S. purpuratus												1		1	3
Nucella emarginata		2		1	1	3	2	1	3	4	8	4	11	5	
Acanthina spp.											1	4	1		
Tegula funebralis										1	1	8	3	6	1
Lottia gigantea						2		1	3				3		
Pisaster ochraceus															1

Ford Point, 5/9/00, Low tide –0.5 ft at 0943 hrs, air temp 18.0°C, water temp. 12.0°C, Clear skies, winds 25-35 mph from the NW, waves 3-4 ft, surge heavy. On site 0945-1145 hrs. No seabirds and one sealion offshore were observed on site.

We left Johnson's Lee early to arrive at Ford Point at low tide. The increasing south swell, now with sets to 10ft, made working around the site difficult. Overall the site appear unchanged from the previous visit. Barnacles were healthy and patchy. *Endocladia muricata* was lush and abundant. Mussels dominated the lower intertidal and appeared healthy. *Phragmatopoma californica* was common with several large patches recently displaced. *Phyllospadix* spp. and *Chondracanthus canaliculatus* were abundant in the area below the mussel zone and as well as various red macroalgae. *Acanthina* sp. and *Ocenebra circumtexta* were noticeably absent from plots at this site. Abalone were not searched for, but no individuals were seen during general observations. Seventy-two *Pisaster ochraceus* were observed in a 30-minute search, but the tide and swell conditions drastically limited the search area.

Photoplot summary – mean % cover by zone at Ford Point (5 plots/zone)

Zone	Bare Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
Barnacle	62.2	28.2	5.8	0.0	0.0	1.8	2.0	0.0
Endocladia	32.4	3.2	51.0	0.0	5.0	7.2	1.2	0.0
Mussels	20.4	0.4	0.4	0.0	55.8	18.2	4.8	0.0

SRFP spring 2000 Motile Invertebrate Count

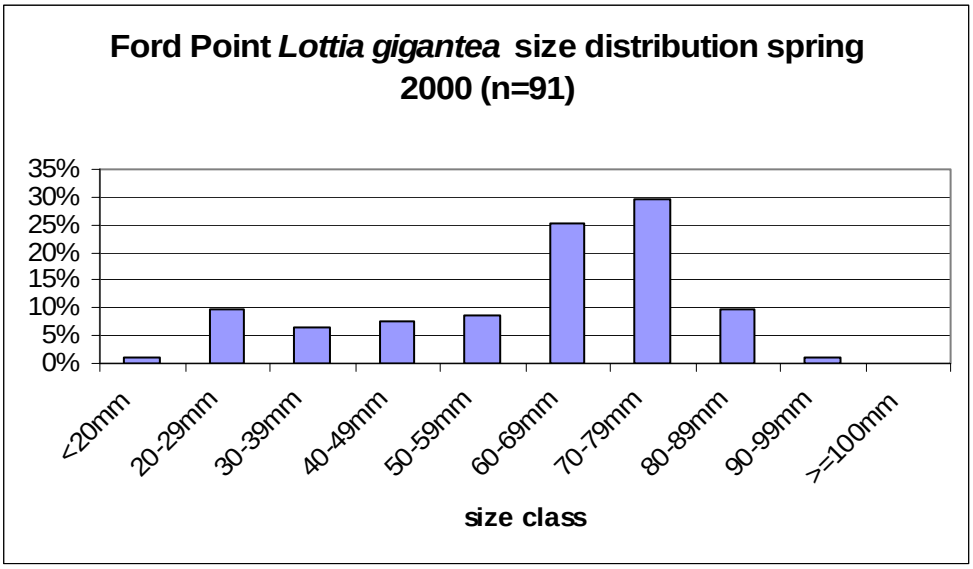
zone	Barnacle					Endocladia					Mussel				
plot #	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534
Nuttalina spp.						2			2				1		3
Pachygrapsus													1	1	
Limpets (>1cm)		3			2			2	5	4	18				2
Nucella emarginata									1	3		5	6	6	1
Tegula funebralis		1												1	
Lottia gigantea	2							3	2	3	5			2	2

Owl Limpet *Lottia gigantea* plots. Size summary at Ford Point

Plot	Density	Mean Size (mm)	StDev	MinSize	MaxSize
600	4.776	66.80	11.62	40	82
601	3.820	65.75	10.45	40	81
602	6.367	73.25	11.68	49	92
603	6.049	66.21	19.39	26	90
604	9.869	43.03	18.59	17	81

Owl Limpet *Lottia gigantea* size distribution within plots at Ford Point

Plot	%<20mm	%20-29mm	%30-39mm	%40-49mm	%50-59mm	%60-69mm	%70-79mm	%80-89mm	%90-99mm	%>100mm
600	0.00%	0.00%	0.00%	6.67%	20.00%	20.00%	46.67%	6.67%	0.00%	0.00%
601	0.00%	0.00%	0.00%	8.33%	8.33%	50.00%	25.00%	8.33%	0.00%	0.00%
602	0.00%	0.00%	0.00%	5.00%	10.00%	15.00%	40.00%	20.00%	10.00%	0.00%
603	0.00%	5.26%	5.26%	10.53%	10.53%	10.53%	31.58%	21.05%	5.26%	0.00%
604	6.45%	25.81%	19.35%	12.90%	12.90%	12.90%	3.23%	6.45%	0.00%	0.00%



East Point, 5/8/00, Low tide –0.3 ft at 1055 hrs, air temp 13.5°C, water temp. 12.0°C, Clear skies, winds 35+ mph from the NW, waves 4-7 ft, surge heavy. On site 0730-1030 hrs. Approximately 80 Western Gulls, 95 Cormorants, 15 Pelicans and 3 Black Oystercatchers were observed at the site. Wind and swell conditions were extreme and the birds were obviously using the rocky bluffs for protection. One harbor seal was observed swimming adjacent to the reef.

Barnacle cover was good with nearly 30% cover in plots. *Endocladia muricata* was healthy and evenly distributed throughout the site and plots. *Silvetia compressa* was mature and healthy with some tattered individuals observed. Mussel plots were consistent with an average of 83% cover, some mussel recruitment was observed. Sand deposition was noted in several areas, specifically between the Silvetia and Endocladia zones. *Phragmatopoma californica* was common and appears to be less dominant in surge channels than in past years. Only one black abalone was measured in a 30-minute search and 37 *Pisaster ochraceus* were counted during a separate observation time. The temperature unit would not download successfully in the field and was brought into the office for exchange or repair. *Ulva sp*. and *Cladophora columbiana* were common just above the mussel zone and red macroalgae, *Chondracanthus canaliculatus*, *Prionitis* sp., and *Mazzaella affinis,* were common to abundant below the mussel zone. On departure from the site 36 harbor seals were observed at Abalone Rocks. The temperature unit was redeployed on May 26th at 0920 am.

Photoplot summary – mean % cover by zone at East Point (5 plots/zone)

Zone	Bare Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
Barnacle	50.4	27.4	14.6	5.6	0.0	1.8	0.2	0.0
Endocladia	20.2	1.6	66.6	10.8	0.2	0.0	0.6	0.0
Rockweed	19.4	1.2	0.0	60.0	0.2	15.8	3.4	0.0
Mussels	3.2	1.2	0.0	0.0	83.0	5.0	7.6	0.0

SREP spring 2000

zone	Barnacle					Endocladia					Silvetia					Mytilus				
plot #	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594
Lepidochitona spp.														7	3		1			
Nuttalina spp.														1	1	2	4	8	9	
Fissurella volcano																	2	2	1	2
Pachygrapsus		1						3					2			1	1	4	4	3
large limpets(>15mm)												2		4	4					
S. purpuratus																1				
Nucella emarginata	1	1	1								5	2	1	5		10	15	28	30	28
Acanthina spp.		2						2	1		5	5	8	7	3	1			1	
Tegula funebralis		10						1	1		32	35	71	6	5			3		
Lottia gigantea																1		2	1	1

San Miguel Island, June 4-7, 2000 Database event # 2000E

Personnel: Dan Richards, Marine Biologist, Channel Islands National Park
Anne Walton, Channel Islands National Marine Sanctuary
Roger McManus, Department of Interior

Procedure: We departed Camarillo, Sunday, via Channel Islands Aviation about 1120 hrs after a morning of uncertainty about the fog clearing. At each monitoring site, photoplots were photographed for later scoring in the office. Abalone plots were checked and a 30-minute search was conducted for sea stars and abalone. Motile invertebrates were counted in photoplots. Shorebirds and pinnipeds were counted on arrival at each site and a general species list was made for each site. We flew back to Camarillo on Wednesday at 1500 hrs.

Results:
June 4, 2000, Cuyler Harbor- low tide+2.0 ft at 1736 hrs, air temperature 22°C, water temp. 15°C, wind NW at 30 mph, surge moderate, sky partly cloudy. On site 1700-1830 hrs. Elephant seals could be seen at the far west end of Cuyler Harbor, 2 Black Oystercatchers on the east beach. Susan Coppelli (wildlife tech) reports that three gray whales have been seen regularly inside Cuyler Harbor over the last three weeks and appear to be feeding there.

We hiked out to Cardwell Point, shortly after arriving to look for Snowy Plovers. No shore birds were present. We didn't get to Glass Float beach, but could see from the air that the high tide floods both Cardwell and Glass Float beaches. Elephant seals and sea lions were on Cardwell beach. It looked like harbor seals were present on Glass Float beach from the air.

Because of the short trip, we did the monitoring at Cuyler Harbor on the marginal afternoon tide. We had to walk over the dune to get past the middle rocks because beach erosion, the surge channel was flooded. No snowy plovers were present on Cuyler beach. We arrived on site at 1700 and photographed the plots, having to wait for waves on the mussel plots. After the photos I noted species for the general list and a 15-minute sea star search was made but the tide was already pretty high. One ochre star was observed near the mussel plots. No abalone were noted on the monitoring reef, however no timed search was made because of the tide level. *Balanus glandula* barnacle density seemed high, apparently they had good recruitment and survival. *Endocladia muricata* was quite lush in several of the plots. *Hesperophycus californica* was present at the site, but the rockweed plots contained all *Silvetia compressa* that I noted. *Acanthina* sp. and *Nucella emarginata* were present. Large *Lepidochitona* sp. were observed. Mussels appeared to be about the same as usual.

Photoplot summary-Mean percent cover by zone in fixed photoplots at Cuyler Harbor, June 2000 (5plots/zone).

Site	Zone	Bare Rock	Barnacle	Endocladia	Rockweed	Mussels	Turfweed	Misc Algae	Misc Animal	Tar
CH	Barnacle	58.0	37.4	4.6	0.0	0.0	0.0	0.0	0.0	0.0
CH	Endocladia	39.6	6.0	36.8	8.8	3.8	0.0	4.8	0.2	0.0
CH	Rockweed	14.0	0.2	0.0	80.0	0.2	0.0	3.0	2.6	0.0
CH	Mussels	26.0	5.4	0.0	0.0	58.6	0.0	1.2	8.8	0.0

June 5, 2000, Crook Point- low tide –1.2 ft at 0714 hrs, air temp. 11.5°C, water temp. 11.0° C, wind W at 40 mph, surge moderate, sky clear. On site 0645-0930 hrs. 2 Elephant seals were present in the surge channel, 2 Black Oystercatchers, 3 Western Gulls, 1 cormorant present on the site. Roger stayed back this morning with a sore knee.

Anne counted 100 ochre stars in a 30-minute search; they were abundant at the site. Dan measured 10 black abalone in a 30-minute search (46-116 mm) including one (53 mm) in plot 393 and one (46 mm) in plot 391. All the abalone appeared healthy, none were in aggregations. A total of 8 ochre stars were present in the abalone plots. Conditions were not very favorable for searching because of the high wind and blowing

sand and spray. *Phragmatopoma californica*, sandcastle worm, dominated most of the rock in plots 391/392 and 393 which is probably the reason no owl limpets were present. Plots were photographed, corner repairs were made, and a general species list was made. No invertebrate count was made. Dan checked the Range Pole beach for Snowy Plovers, no shorebirds were found. About 30-40 elephant seals and two bull sea lions were present however.

Algae were very lush with a high diversity present. *Mazaella* (*Iridea*) *flaccida*, and *Microcladia borealis* were noted as especially abundant. *Laminaria setchellii* was abundant on the sides of the surge channels *Gastroclonium coulteri* was also exceptionally common. *Analipus japonicus*, a species not normally found below Pt. Conception and only observed at Crook Point on two occasions was common on the reef, much more abundant than ever observed here before. Both species of rockweed were present, *Hesperophycus californicus* plants were mostly young and *Silvetia compressa* cover was low with mostly pretty tattered looking plants. *Mytilus californianus* appeared to have had a good recruitment with many 20-30 mm individuals around. *Balanus glandula* was common as it was at Cuyler Harbor. *Endocladia* was common but did not form thick mats. *Porphyra perforata* was common. Various green algae dominate the upper rocks as usual here. Purple urchins were abundant in the pools mostly in round holes. *Macrocystis pyrifera* was growing in several of the tidepools.

Photoplot summary-Mean percent cover by zone in fixed photoplots at Crook Point, June 2000 (5plots/zone)

Site	Zone	Bare Rock	Barnacle	Endocladia	Rockweed	Mussels	Turfweed	Misc Algae	Misc Animal	Tar
CP	Barnacle	49.8	46.6	1.2	0.0	0.8	0.0	1.4	0.2	0.0
CP	Endocladia	31.4	26.0	23.8	2.4	7.4	0.0	7.4	1.6	0.0
CP	Rockweed	42.2	13.2	4.8	5.4	13.0	0.0	18.8	2.6	0.0
CP	Mussels	7.0	6.0	0.0	0.0	65.0	0.0	19.2	2.8	0.0

Black abalone plot summary at Crook Point, San Miguel Island, June 2000

SiteCode	Plot number	Count	MeanSize (mm)	Density	%<45mm	%45-126mm	%127-145mm	%>145mm
CP	1	1	46	1.11	0.00	1.00	0.00	0.00
CP	2	0						
CP	3	1	52	0.50	0.00	1.00	0.00	0.00
CP	4	0						
CP	5	0						
CP	30-minute	8	101		0.00	1.00	0.00	0.00

June 6, 2000- Otter Harbor- low tide –0.9 ft at 0812 hrs, air temp. 15°C, water temp. 14.5°C, wind NW at 20 mph, surge light, dense fog in the morning lifting through the day. On site 0800-1230 hrs. 21 harbor seals, 2 Black Oystercatchers were at the site, and 25 elephant seals were on the small beach adjacent to the site. A Western Gull nest on the slope above the site had three chicks in it. Gulls have never been observed nesting here before.

Roger and Anne counted 25 ochre stars, 5 giant stars, and 2 bat stars in a 30-minute search. Dan found 110 black abalone (39-153 mm) (five were not measured) in a 60-minute search with assistance from Roger and Anne. Five abalone were present in the plots (4 in 369, 1 in 366). One ochre star and an octopus were found in plot 369 also. A total of 96 owl limpets were measured in the three irregular plots they are monitored in with sizes ranging from 17-82 mm. This total is about 20% lower than previous surveys.

Algae were lush though not as remarkable as at Crook Point. The small six-armed seastar, *Leptasterias hexactis*, was common. Porcelain crabs *Petrolisthes* spp. were found in plots. Neither of these is commonly observed here. A large monkey-faced eel was found in a crevice, on wet sand at low tide. It is unusual to find adults of this fish like this. Both *Hesperophycus* and *Silvetia* were common. Plot 359 in the rockweed zone was still primarily covered by barnacles; plot 358 had bleached algae where runoff occurs through the plot. *Endocladia muricata* formed lush carpets in some plots. Mussel plots looked normal. *Nucella emarginata*

were common in the mussel plots. *Ulva* sp. was abundant in the upper barnacle plots but *Balanus glandula* was doing well and large individuals were present.

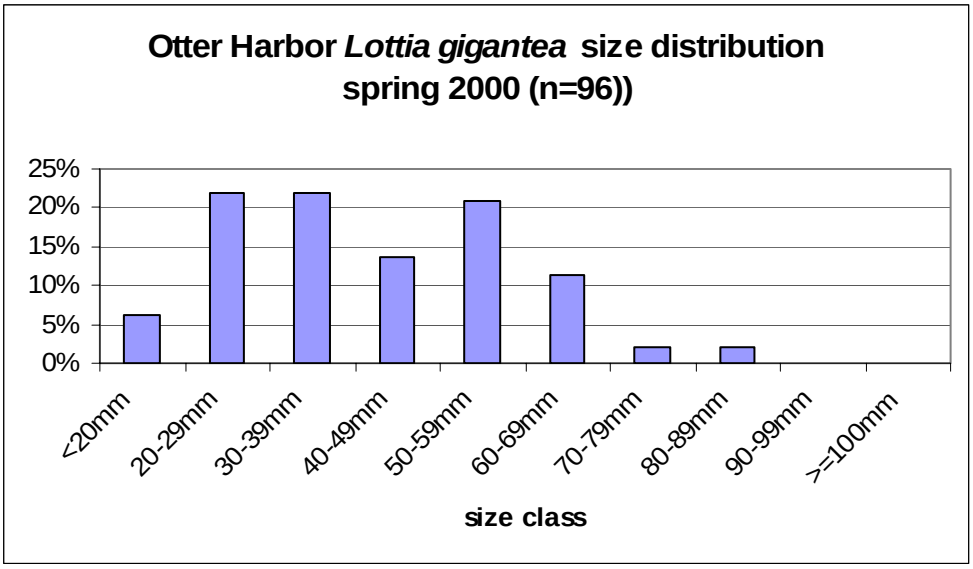
We walked back along Simonton Cove looking for Snowy Plovers, finding none. Two more black Oystercatchers, one Killdeer, and one Willet were observed. Most of the beach on the western portion of Simonton was eroded away leaving a sheer wall of sand 6 ft high or more with debris and drift wood sticking out. Debris was abundant on the beach, possibly washed out of the dunes after being buried for years. The trimaran sailboat present in January was all broken into small pieces. Pieces were even found at Harris Point on 6/7.

Photoplot summary-Mean percent cover by zone in fixed photoplots at Otter Harbor, June 2000 (5plots/zone)

Site	ZoneName	Bare Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
OH	Barnacle	31.8	25.6	0.0	0.0	0.0	40.0	0.2	2.4
OH	Endocladia	9.4	3.4	60.8	17.8	0.6	8.0	0.0	0.0
OH	Rockweed	17.2	11.4	23.6	38.0	0.2	9.0	0.2	0.4
OH	Mussels	6.6	2.0	0.2	0.0	55.2	31.2	4.8	0.0

Owl limpet plot summary at Otter Harbor, June 2000

Site	Plot	Count	Mean Size (mm)	StDev	Min Size	Max Size	Density	%<20 mm	%20-29mm	%30-39mm	%40-49mm	%50-59mm	%60-69mm	%70-79mm	%80-89mm	%>=90mm
OH	368	19	47	16.60	23	77	5.1	0%	21%	16%	16%	21%	21%	5%	0%	0%
OH	369	61	41	15.76	17	82	9.0	7%	21%	23%	13%	23%	10%	2%	2%	0%
OH	496	16	38	17.45	19	80	1.0	13%	25%	25%	13%	13%	6%	0%	6%	0%



Black abalone plot summary at Otter harbor, San Miguel Island, June 2000

SiteCode	Plot	Count	MeanSize	Density	%<45mm	%45-126mm	%127-145mm	%>145mm
OH	1	0						
OH	2	1	66	0.50	0.00	1.00	0.00	0.00
OH	3	0						
OH	4	0						
OH	5	4	66	0.59	0.00	1.00	0.00	0.00
OH	60-minute	99	81		0.02	0.96	0.01	0.01

SMOH spring 2000 Motile Invertebrate Counts

	Barnacle zone					Endocladia zone					Silvetia zone					Mussel zone				
plot #	370	371	372	373	374	360	361	362	363	364	355	356	357	358	359	375	376	378	379	380
Lepidochitona spp.									1	1			1							
Nuttalina spp.						1	3		4	1		2	2			1	1	2	5	1
Fissurella volcano																1				
Pachygrapsus						1	2		2	2		3	2			3	1	2	2	2
Nucella emarginata						1	2	2	2			2				7	4	2	3	2
Tegula funebralis					47	4			1	12							5			
Ocenebra circumtexta					1					1										
Lottia gigantea								1			1	1	3		1	8	6	2	9	5
Littorina spp.	>100	>100		<100		76	62	5	21	3	35	8	2	56	>200					
Limpets>1cm	nc	nc	9	5	1	nc	nc	nc	nc	nc		4		nc	nc	nc	nc	nc	nc	nc
Leptasterias hexactis																		1		1
Petrolisthes sp.																		2		
Mopalia muscosa					1															

June 7, 2000 Harris Point- low tide –0.5 ft at 0912 hrs., air temp. 16°C, water temp. 14.5°C, wind NW at 10 mph, surge light, sky clear. No pinnipeds were present. There was one Black Oystercatcher. One white egg was found on top of the reef that appeared to be abandoned but had not been predated.

Six black abalone were present in the plots (2 in 444, 4 in 443). Four abalone were present in the crevice transect. A 30-minute search with all three of us only located 19 more black abalone (30-143 mm). Four Ochre stars and 2 bat stars were found in the 30 minute search. An additional two ochre stars were in the crevice transect. Anne and Roger measured 105 owl limpets (18-77 mm) for size distribution in the area just west of plot 445.

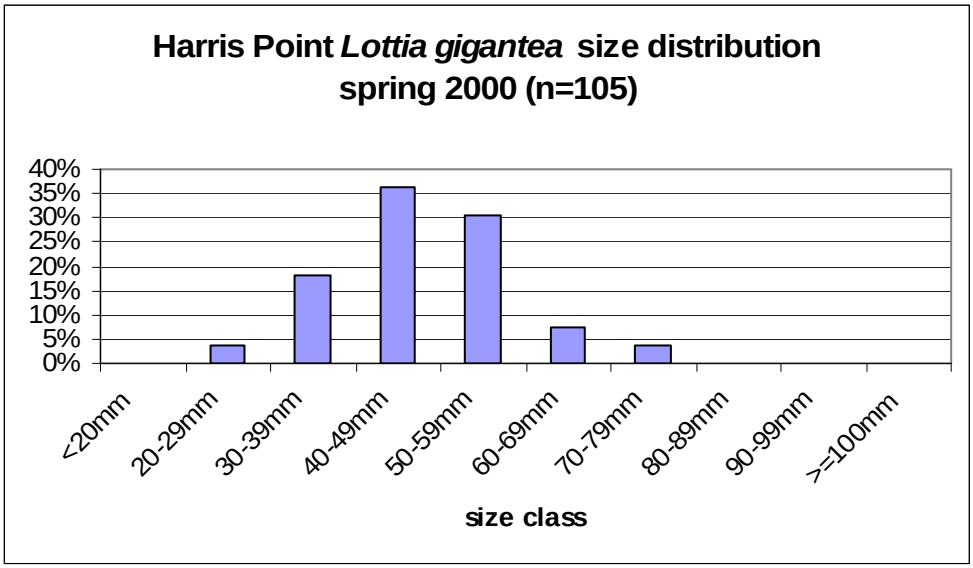
Algae were lush in the cobble area and large brown algae were abundant in the surge channels and pools. *Costaria costata* was common in some of the deeper pools, an unusual find here. *Egregia menziesii, Laminaria setchellii*, and *Desmarestia ligulata* were all common to abundant. Shore crabs, *Pachygrapsus crassipes*, were abundant around the site with many juveniles in the plots during the motile invertebrate count. One shore crab was observed with a dead juvenile red abalone in its grasp. Small owl limpets were common in the mussel plots. Proliferating anemones, *Epiactis prolifera*, were common. *Tegula brunnea*, the northern turban snail was present. *T. funebralis* were abundant in the lower areas but not present in any of the photoplots. Hermit crabs of different types were common. Hermit crabs were seen in shells that appeared to be *Nucella canaliculatus*, a snail not found here. Fresh tar was common on the rocks and in some pools.

Photoplot summary-Mean percent cover by zone in fixed photoplots at Harris Point, June 2000 (5plots/zone)

Site	ZoneName	Bare Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
HP	Barnacle	33.2	28.2	5.4	0.0	11.0	21.2	1.0	0.0
HP	Endocladia	18.4	9.6	62.0	5.0	2.0	2.6	0.4	0.0
HP	Rockweed	27.2	6.6	26.4	37.4	0.0	2.4	0.0	0.0
HP	Mussels	32.8	10.2	4.0	0.0	48.0	3.6	1.4	0.0

Owl limpet summary from 30 minute random search at Harris Point, June 2000

Site	Count	Mean Size	StDev	Min Size	Max Size	%<20mm	%20-29mm	%30-39mm	%40-49mm	%50-59mm	%60-69mm	%70-79mm	%>=80mm
HP	105	48	10.49	27	77	0.00%	3.81%	18.10%	36.19%	30.48%	7.62%	3.81%	0.00%



Black abalone plot summary at Harris Point, San Miguel Island, June 2000

SiteCode	Plot	Count	MeanSize (mm)	Density	%<45mm	%45-126mm	%127-145mm	%>145mm
HP	1	0						
HP	2	0						
HP	3	4	111	1.60	0.00	0.75	0.25	0.00
HP	4	2	124	0.35	0.00	0.50	0.50	0.00
HP	5	0						
HP	30-minute	19	93		0.11	0.68	0.21	0.00
HP	Crevice	4	70		0.00	1.00	0.00	0.00

Black abalone site comparison San Miguel Island, June 2000.

SiteCode	Count	MeanSize (mm)	StDev	MinSize	MaxSize	Density
CP	10	90.80	25.37	46	116	0.45
HP	29	94.59	32.38	30	143	0.34
OH	104	80.70	22.61	39	153	0.39

SMHP spring 2000 Motile Invertebrate Counts

zone	Barnacle zone					Endocladia zone					Hesperophycus zone					Mussel zone				
plot #	440	436	437	438	439	431/446	432	433	434	435	421	422	423	424	425	426	427	428	429	430
Lepidochitona spp.		2		3		2							1							
Nuttalina spp.		6	28		3	3										1				3
Pachygrapsus		2		1	3	3					1	1	2			5	1		4	1
Acanthina spp.																				
Ocenebra circumtexta				2	4	2														
Lottia gigantea		18	14			1										11			1	2
Littorina spp.	p	p	p	p	p	p	p	p	p	p	p	p	p	p	p	p	P	p	p	p
Limpets>1cm	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Leptasterias hexactis				1																

P=present, nc=no count

Anacapa Island, June 5 - 6, 2000 (Database event #2000-F)

PERSONNEL: Derek Lerma, Biological Technician, Channel Islands National Park

PROCEDURE: Arrived June 5th via the Pacific Ranger and kayaked ashore with all sampling and camping gear. Conditions were warm and calm while setting up camp at the old ranger tent site. Several fishing boats were observed on the south side.

RESULTS: June 6, 2000, Cat Rock - low tide -0.9 ft at 0804 hrs, air temperature 20.5°C, water temp. 16°C, wind SW at 3-5 mph, surge light, swell west 3 ft., sky clear. On site 0630-1030 hrs. Three harbor seals were observed in the water adjacent to the site. Two Black Oystercatchers and eight Western Gulls were counted on the monitoring site.

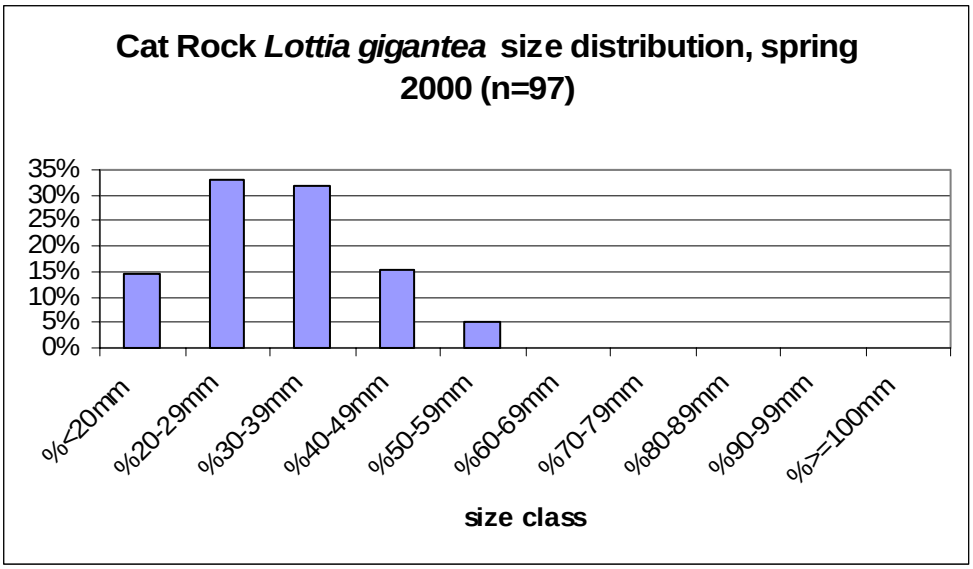
Sampling at Cat Rock is always a full days work even with a full crew. Sampling by myself I decided that certain aspects of the sampling were more important to complete in the field. Photographed photoplots and measured limpets within plots. Performed 30-minute general search for abalone and seastars. No seastars were observed and one black abalone (86 mm) was measured. Rockweeds *Silvetia compressa* and *Hesperophycus californicus* were lush and abundant throughout the site. *Endocladia muricata* was abundant but patchy. Acorn barnacle cover was relatively high in barnacle plots and *Tetraclita rubescens* and *Pollicipes polymerus* were common in mussel plots. Both encrusting and articulated coralline algae were common including *Corallina vancouveriensis*. *Mazzaella affinis* was abundant in lower surge channels and *Porphyra sp*. was common on the tops of rocks. Overall the site appeared robust in both diversity and density of invertebrate and algal species. *Pachygrapsus crassipes* was abundant and *Ligia occidentalis* and *Tegula sp*. were common.

Photoplot summary – mean % cover by zone at Cat Rock (9 plots/zone) (Rockweed = *Hesperophycus* and *Silvetia* combined, data are separate in database)

Zone	Bare Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
Barnacle	17.8	15.7	8.6	53.6	0.0	2.1	0.0	0.1
Endocladia	22.7	13.2	36.9	8.9	0.7	17.4	0.2	0.0
Rockweed	12.0	7.1	9.4	68.4	0.1	2.8	0.0	0.1
Mussels	30.2	16.6	3.7	0.0	31.6	16.7	1.3	0.0

Owl limpet plot summaries at Cat Rock, June 2000

Plot	Count	MeanSize (mm)	StDev	Min Size	Max Size	Density	%<20 mm	%20-29mm	%30-39mm	%40-49mm	%50-59mm	%60-69mm	%>=70 mm
1	62	27.6	8.6	15	48	19.7	21%	42%	31%	6%	0%	0%	0%
2	24	37.1	9.3	19	53	7.6	4%	13%	46%	33%	4%	0%	0%
3	11	42.0	12.1	23	57	3.5	0%	27%	9%	27%	36%	0%	0%


Cat Rock *Lottia gigantea* size distribution, spring 2000 (n=97)
35%
30%
25%
20%
15%
10%
5%
0%
%<20mm
%20-29mm
%30-39mm
%40-49mm
%50-59mm
%60-69mm
%70-79mm
%80-89mm
%90-99mm
%>=100mm
size class

Fall 2000 Rocky Intertidal Monitoring Trip Reports

Anacapa Island, November 10-13, 2000 (Database event #2000-G)

PERSONNEL: Dan Richards, Marine Biologist, Channel Islands National Park
Derek Lerma, Biological Technician, Channel Islands National Park
Brent Mardian, Student Intern, UCSB/ Minerals Management Service

PROCEDURE: Arrived November 10th via the Island Packers Company (M/V SUNDOWN) and skiffed ashore at Frenchy's Cove with kayaks, sampling equipment and camping gear. Conditions were cool and breezy. Camp was established at the old ranger tent site below the pelican closure sign. We completed the South Frenchy's Cove monitoring on the 10th. We kayaked to Middle Anacapa on the 11th to complete both the east and west sites. Harbor Seal Arch abalone plots were not visited because of lack of time and degrading sea conditions. Cat Rock was monitored on the 12th. At each site, monitoring included scoring and photographing all photo plots, motile invertebrate counts, measuring abalone or owl limpets in established plots, conducting a general species list for presence/relative abundance, and general search for seastars and abalone. Motile invertebrate counts involve counting all gastropods, chitons, and owl limpets, and other limpets over 1 cm. in each plot. *Littorina* snail abundance was estimated. We snorkeled west of Frenchy's Cove on the 13th before being picked up by the OCEAN RANGER at 1230 hrs.

RESULTS:
General observations:
A bright full moon was present all weekend. Ten to twelve fishing boats were observed each morning, fishing offshore of Frenchy's Cove and inside the Pelican closure area. One commercial lobster boat was seen on Saturday off Middle Island, another on Sunday off the south side of West Island. The dive boats SPECTER and EXPLORER were diving off Frenchy's Cove and the Pelican closure area. On Sunday night, four light boats and three squid seiners were working off the Frenchy's Cove area. Video was shot of the light boats (which all had hooded lights) and of the seining operation. Hundreds of western gulls were in the area on Monday morning. Only a few gulls (10's) were seen in the area on previous days. Numerous rats were observed around camp each night. Carcasses of an immature Brown Pelican, a Northern Fulmar, and a Double-Crested Cormorant were found on the beach or bluff of Frenchy's Cove. A Common Murre was observed just off the beach at Frenchy's on the 13th. A large herd of common dolphin was seen in the channel on both the 10th and 13th. Large numbers of Black-vented Shearwaters were with the dolphin on the 10th and primarily western gulls were with them on the 13th.

10 November 2000 South Frenchy's Cove. Low tide –0.1 ft at 1443 hrs, air temperature 17°C, water 16 °C, cold and breezy conditions, mostly clear, wind NW-15 mph, light surge. No shorebirds or marine mammals were present on arrival, one Black Oystercatcher was observed later.

We arrived on site at 1230 under partly cloudy skies and excellent sampling conditions. Standard monitoring protocol was performed including plot species census, motile invertebrate counts and general species census. Barnacle cover within plots was consistent and averaged nearly 30% cover. Algae were healthy and abundant. *Endocladia muricata* was thin and bleached in several areas. *Silvetia compressa* was abundant and lush. *Hesperophycus californicus* was present. Mussel plots all had a mix of *Mytilus californianus* and *Chondracanthus/Corallina/Gelidium* algae complex. No seastars or abalone were observed during separate 30-minute searches. Owl limpet plots ranged from 10 to 24 individuals per plot and had a size range of 15-59 mm. Sand deposition in surge channels was high nearly touching the bottom corner of plots 154 and 155. *Pachygrapsus crassipes* were numerous with most individuals 1-2 cm. The temperature logger was successfully downloaded and replaced. *Liagora californica* was observed in some upper tidepools along with *Amphiroa zonata*. A small amount of *Sargassum muticum* was noted.

Photoplot summary-Mean Percent cover by zone in fixed photoplots at South Frenchy's Cove (5plots/zone)

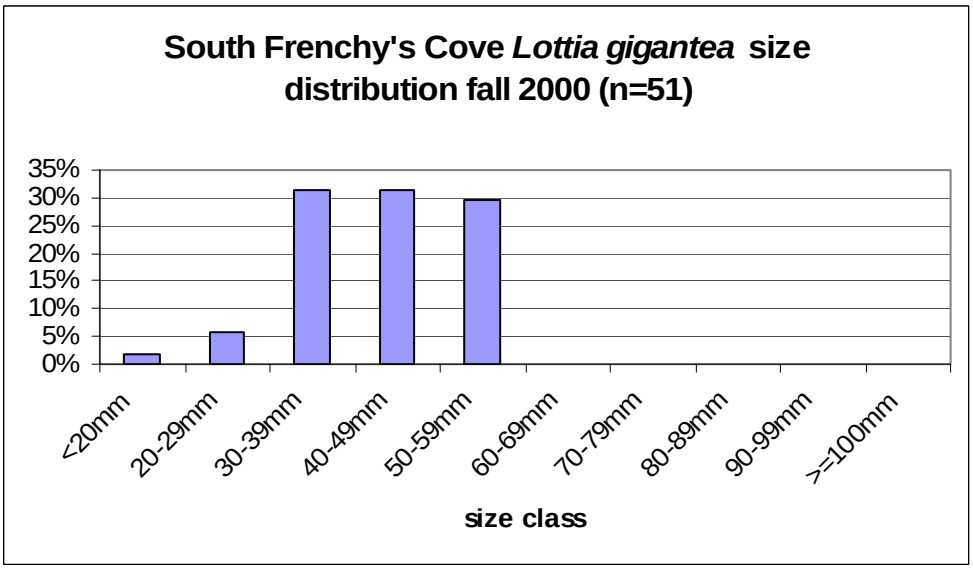
ZoneName	Bare Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
Barnacle	56.4	29.8	10.6	0.2	0.0	2.4	0.6	0.0
Endocladia	19.0	1.0	55.6	18.6	0.0	5.6	0.2	0.0
Rockweed	16.0	2.2	4.8	69.0	0.0	7.4	0.6	0.0
Mussels	4.0	0.2	0.0	0.0	52.0	43.6	0.2	0.0

ANSFC Motile Invertebrates fall 2000

zone	Barnacle					Endocladia					Silvetia					Mytilus				
plot #	249	250	251	252	253	154	155	256	257	258	259	260	261	262	263	201	202	264	265	266
Lepidochitona spp.							11					3								
Nuttalina spp.																		1	2	3
Fissurella volcano															2	1		1		
Pachygrapsus			1		1	2	1	1					1			1	4	2	5	3
Mopalia muscosa										1										
limpets (>1 cm)							1				1	1	2	1	3					1
Nucella emarginata																		1	2	7
Acanthina spp.	1			1	1	1		4	3		2	3	4				1	1	1	3
Tegula gallina										1										
Lottia gigantea												1		1					1	
Littorina spp.	>100	>100		>100	>100	>100	10-100		<10					<100						

Owl limpet plot summary at South Frenchy's Cove

Plot	Count	Mean Size (mm)	StDev	Min Size	Max Size	%<20mm	%20-29mm	%30-39mm	%40-49mm	%50-59mm	%>60mm
1	17	45.35	9.31	30	59	0.0%	0.0%	29.4%	29.4%	41.2%	0.0%
2	24	39.46	9.37	15	57	4.2%	4.2%	41.7%	33.3%	16.7%	0.0%
3	10	44.30	12.00	25	59	0.0%	20.0%	10.0%	30.0%	40.0%	0.0%



11 November 2000 Middle Anacapa West and East. Low tide –0.4 ft at 1522 hrs, air temperatuere17°C, water 15.5°C, clear sky, excellent conditions degrading to windy in the evening, Wind NE-5 mph changing to NW-15 mph, light surge. One Black Oystercatcher was observed later, no animals were present on arrival, as several people (kayak campers and ICEG restoration crew) were present on the reef when we arrived.

We kayaked from West Island to Middle Island West arriving at 1130 to clear skies and a fairly high tide. Paddled to the Middle East site about 1430 and finished photos, scoring, plot species census and motile invertebrate counts by 1630. The wind picked up to 15 knots with 2-3' seas at about 1500 making it a long paddle back to Frenchy's, arriving just before dark. Both sites looked healthy and undisturbed. *Acanthina sp*. was abundant at the west site and common at the east site. Juvenile *Ocenebra sp*. were also fairly abundant. Some juvenile *Acanthina sp*. and *Nuttallina* spp. were observed. Seastar numbers were definitely down. Brent searched for about 15 minutes found 13 *Pisaster ochraceus*; the count was performed at 1400. The tide wasn't as low as last spring but there were noticeably fewer stars. The photograph of plot 244 (east site) has the wrong orientation and we did not have additional film to reshoot after the error was noticed. *Hesperophycus californicus* was present in the correct orientation. Plot 244 was scored in the proper orientation; however, the species census and invertebrate count was done in the wrong orientation. One *Haliotis cracherodii* was found inside plot 453 under *Silvetia compressa*. Percent cover of indicator species between sites appeared consistent. Plot 454 is a bit of an anomaly. The supposed rockweed plot has no rockweed and is mostly *Tetraclita rubescens* and coralline algae, its' low elevation at the edge of the tidepool gets significant foot traffic from people landing at low tide.

Photoplot summary-Mean Percent cover by zone in fixed photoplots at Middle Anacapa East (3 plots/zone)

ZoneName	Bare Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
Barnacle	45.3	22.0	16.7	0.3	1.0	13.7	1.0	0.0
Endocladia	30.3	9.7	26.7	14.7	2.3	16.3	0.0	0.0
Rockweed	9.3	1.3	1.0	68.0	6.0	13.7	0.7	0.0
Mussels	5.0	2.0	0.0	0.0	83.7	8.7	0.7	0.0

ANME Motile Invertebrates fall 2000

zone	Barnacle			Endocladia			Silvetia			Mytilus		
plot #	243	244	245	240	241	242	53/238	237	469/239	476	477	478
Lepidochitona spp.	2	1				1	2		1	1	2	
Nuttalina spp.	1				6		1		7	2	3	1
Fissurella volcano										1	2	1
Pachygrapsus	1			2			2	3	2		1	1
Pagurus spp.												
large limpets(>10mm)		3						1				
S. purpuratus												
Amphissa versicolor										2	1	
Nucella emarginata	3								3		6	1
Acanthina spp.	8	1	4					4		4	1	1
Tegula funebralis												
nuttali	1											1
Ocenebra												
circumtexta	1				1		1		3	12	10	5
Lottia gigantea			1		1						1	3
Littorina spp.		>100	10-100	>100	>100	>100						

Photoplot summary-Mean Percent cover by zone in fixed photoplots at Middle Anacapa West (5plots/zone)

ZoneName	Bare Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
Barnacle	42.4	12.4	20.0	3.2	1.8	20.0	0.2	0.0
Endocladia	48.2	5.8	21.4	2.4	1.8	19.4	1.0	0.0
Rockweed	13.4	2.8	2.4	64.2	1.4	14.8	1.0	0.0
Mussels	14.8	2.8	0.2	0.0	66.2	13.8	2.2	0.0

ANMW Motile Invertebrates fall 2000

zone	Barnacle						Endocladia				Silvetia					Mytilus				
plot #	447	448	449	450	451	457	458	459	460	461	452	453	454	455	456	462	463	464	465	466
Lepidochitona spp.	1				1		3		2		1						2		1	
Nuttalina spp.		1	2		9	5	6	11	3				3	2	2	10	32	15	8	
Fissurella volcano													1		5		1	2		2
Pachygrapsus		2		3	1			3			1	2				2		3		
Mopalia muscosa														1						
large limpets(>10mm)					1			6			2	2	2	5	4	1	1			1
S. purpuratus																			1	3
Amphissa versicolor											1			1						1
Nucella emarginata							1								5	1	6	8	3	
Acanthina spp.	3	2	5	4	4	9	7	13	10	1	12	7	2	3	7	4	3	0	1	0
Ocenebra circumtexta	1	1		1	1	1	8							1	1	3	2	2		2
Lottia gigantea					1	3	8				1			1	4	3			1	
Littorina spp.	<100		>10	<100				<10	>10	<100										
Haliotis cracherodii												1								

12 November 2000 Cat Rock. Low tide –0.7 ft at 1605 hrs, air temperature 16°C, water 15°C, excellent weather conditions, wind W- 8mph, light to moderate surge with 2-3 ft surf. Four harbor seals were following us from offshore. The only birds in the area were a single wandering tattler and one black oystercatcher. Two black oystercatchers were observed later.

We arrived on site at 1230 to clear skies and a falling tide. Algae, mostly *Hesperophycus californicus*, dominated barnacle plots. Barnacle cover within plots ranged from 0-31%. *Endocladia muricata* plots averaged just over 30% and were fairly consistent throughout the nine plots. Rockweed plots averaged near 67% cover of rockweed. *Silvetia compressa* made up the greatest percentage of the cover within rockweed plots with one exception. Mussel plots were highly variable with regards to species assemblages. Only two mussel plots had greater than 50% mussel cover with the remainder of the mussel plots consisting of mostly encrusting and erect coralline algae and a wide array of sessile invertebrates. Owl limpets, *Lottia gigantea,* plots were monitored with L1 having high frequencies of small individuals, 28 of 53 limpets were < 25 mm. Only one black abalone (99 mm) was observed over the entire site. Abalone plots were checked and no individuals were found. Most abalone plots were dominated by red algae, mostly *Mazzaella affinis* and *Chondracanthus canaliculatus*. No seastars were observed during a 30-minute general search of the area or during general species census of the reef. Plot species censuses and motile invertebrate counts were performed in all photoplots. Overall motile invertebrate densities were low. *Acanthina* sp. was the dominant motile invertebrate with the exception of *Littorina* sp. No *Nucella emarginata* or *Tegula* sp. were observed within plots but *T. funebralis* and *T. gallina* were common in the upper crevice habitat.

Photoplot summary-Mean Percent cover by zone in fixed photoplots at Cat Rock (9plots/zone)

ZoneName	Bare Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
Barnacle	20.6	11.0	6.4	61.2	0.0	0.4	0.2	0.1
Endocladia	23.1	11.3	30.9	7.6	1.8	22.8	2.6	0.0
Rockweed	13.9	8.1	6.7	66.8	0.2	4.1	0.2	0.0
Mussels	15.3	18.3	1.7	0.0	32.4	27.9	4.3	0.0

ANCR Motile Invertebrates fall 2000

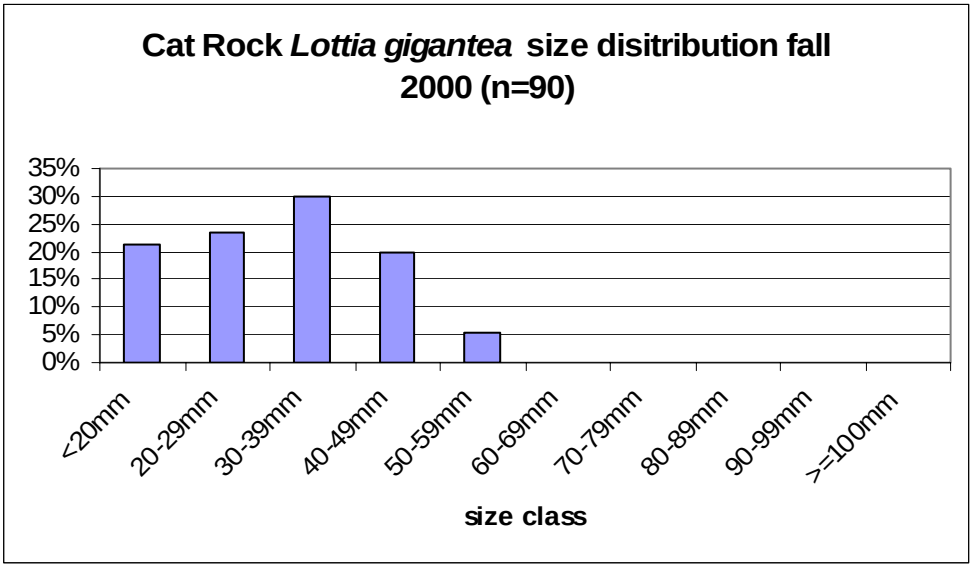
zone	Barnacle									Endocladia								
plot #	33	37	135	31	35	38	32	36	39	212	14	51/18	54	13	467/17	52	53	19
Lepidochitona spp.		2	1			1								3	5	1	1	2
Nuttalina spp.										8	8	2	8	4	19	5	2	
Fissurella volcano											2	2		1		6		
Pachygrapsus		1			2			1	1				1			1	2	
large limpets(>10mm)		1	1			6		2		1	1				4		1	4
S. purpuratus Acanthina spp.	2	9	6	10	7		6	5	10									7
Ocenebra circumtexta											1			1		1	2	
Lottia gigantea											6			2	1		2	
Littorina spp.	<10	10-100	<10	>100	10-100	>100	10-100		>100					10-100				<10

ANCR Motile Invertebrates fall 2000

zone	Silvetia									Mytilus								
plot #	2	55/7	9	3	5	6	4	8	10	56	471	164	470	204	468	203	473	472
Lepidochitona spp.					1												1	
Nuttalina spp.	2	1			6					41	9	15	16	17	28	14	11	13
Fissurella volcano												3	1	3	4	3	1	2
Pachygrapsus	1		1				2	2		1		2		3		3	3	1
large limpets(>10mm)	4		1	2	1	5	5	2							1			
S. purpuratus												2	1	4			1	
Acanthina spp.		1	1	3	6	2		1	1			1						
Ocenebra circumtexta	1	1		4	4		1	1		1		6	3	5	5	5	1	5
Lottia gigantea										4	2	6	13	1	2	1	2	3
Littorina spp.		>100	10-100	10-100		10-100	<10										<100	

Owl limpet plot summary at Cat Rock

Plot	Count	Mean Size (mm)	StDev	Min Size	Max Size	%<20mm	%20-29mm	%30-39mm	%40-49mm	%50-59mm	%>60mm
1	53	27.60	10.16	15	49	30.19%	26.42%	30.19%	13.21%	0.00%	0.00%
2	26	34.96	9.45	15	50	7.69%	15.38%	34.62%	38.46%	3.85%	0.00%
3	11	38.27	14.94	19	58	9.09%	27.27%	18.18%	9.09%	36.36%	0.00%



San Miguel Island, November 24-27, 2000 (Database event #2000-H)

PERSONNEL: David Kushner, Marine Biologist, Channel Islands National Park
Derek Lerma, Biological Technician, Channel Islands National Park
John Ugoretz, Biologist, California Department of Fish and Game
David Steichen, Volunteer, Berkeley, California

PROCEDURE: John Ugoretz and I departed Camarillo, Friday, via Department and Fish and Game Skymaster about 900 am arriving under clear skies at San Miguel Island at 1000 am. David Kushner and David Steichen were already on the island when we arrived. At each monitoring site, photoplots were photographed and scored in the field. Abalone plots were checked and a 30-minute search was conducted for sea stars and abalone. Motile invertebrates were counted in photoplots and species census within plots and the general monitoring areas was performed. Physical measurements and shorebird/pinniped counts were conducted upon arrival at each site. All personnel returned to Camarillo via Channel Islands Aviation on Tuesday November 28th.

RESULTS:

November 24, 2000, Crook Point - low tide -0.4 @ 1506, air temperature 16°C, water temp. 12°C, wind WNW at 20 mph, surge moderate, sky mostly clear with high clouds. Monitoring was performed between 1245- 1600 hrs. Twenty-four Northern Elephant seals were counted in a small cove just south/east of the site. Six cormorants were counted on the monitoring site.

After arriving we quickly got situated and prepared some food before hiking to Crook point. Upon arrival at Crook point the tide was still dropping and 4-8 ft. waves were breaking over the outer reef. Waves frequently overwashed the outer reef throughout the sampling period and limited the scope of work. California DF&G biologist John Ugoretz searched for abalone, finding three individuals. No abalone were observed in monitoring plots and unsafe conditions reduced the searchable area during the 30- minute survey. Ugoretz counted 58 *Pisaster ochraceus* in a 30-minute search of the area. David Kushner scored photoplots with David Steichen while Derek Lerma photographed, censused, and counted motile invertebrates. Overall the site appeared healthy. Barnacle (*Balanus/Chthamalus* complex) cover averaged 42% within barnacle plots. *Endocladia muricata* and *Silvetia compressa* plots had low algal cover and algae were overall uncommon in plots. *Ulva* sp. and *Porphyra* sp. was common over the entire site. Mussel plots were healthy and dense with recent recruitment evident. *Phragmatopoma californica* was common in the mussel zone plots. Motile invertebrates were uncommon in all plots with few individuals and low diversity noted. Owl limpet's *Lottia gigantea* were not measured in abalone plots due to high surf conditions. I revisited the site on November 27 to reshoot the photoplots because of an error on the previous visit. On the 27th the outer reef was inaccessible and thus several photoplots were not photographed. A young gray whale was observed lunge feeding just offshore of the monitoring site on the second visit.

Photoplot summary-Mean percent cover by zone in fixed photoplots at Crook Point (5plots/zone)

Zone	Bare Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
Barnacle	55.4	42.4	2.0	0.0	0.0	0.0	0.2	0.0
Endocladia	37.4	23.0	15.0	1.4	8.2	12.8	2.2	0.0
Rockweed	30.0	15.6	4.8	5.0	24.2	18.4	2.0	0.0
Mussels	9.0	3.2	0.0	0.0	74.8	10.4	2.6	0.0

SMCP Motile Invertebrates fall 2000

zone	Barnacle					Endocladia					Silvetia					Mussel				
plot #	137	147	148	149	150	386	387	388	389	390	396	397	398	399	400	381	382	383	384	385
Lepidochitona spp.													3			1				
Nuttalina spp.									1		1	1	1			1			1	
S. purpuratus																			4	4
Nucella emarginata							1		1		2			2	1	3			3	2
Tegula funebralis									2											
Lottia gigantea															1			1		
Littorina spp.	>100	>100	10-100	10-100	>100	>100			>100	>100	>100					<10				
Pisaster ochraceus																				2

November 25, 2000, Otter Harbor- low tide -0.5 @1546, air temp. 16°C, water temp. 13°C, wind NNW 5 mph., surge heavy, sky clear. On site from 1300-1630 hrs. Sixty two Northern Elephant seals were observed at the cove just east of the monitoring site. Thirty-two harbor seals and two black oystercatchers were counted at the monitoring site.

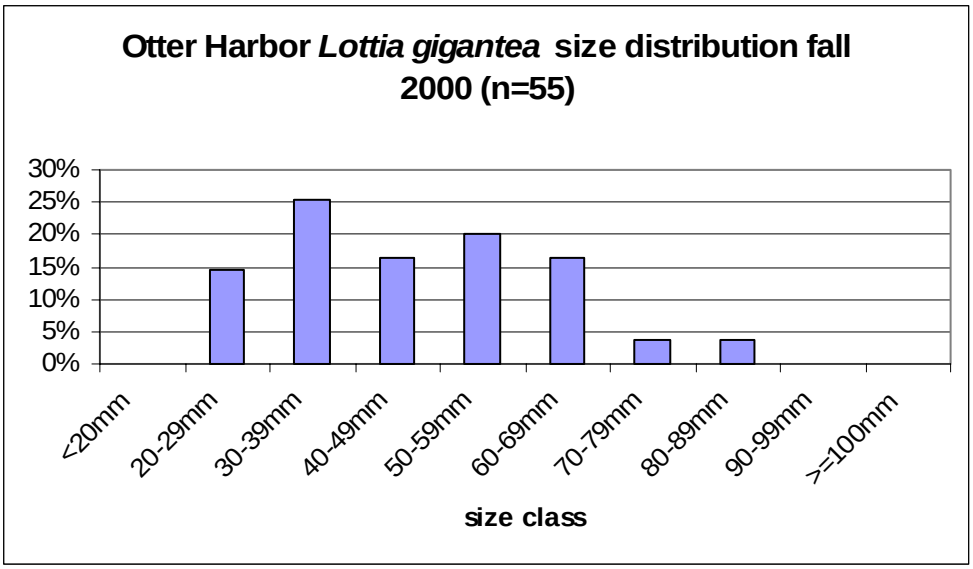
The site appeared healthy and algae were lush and diverse. *Endocladia muricata* and *Silvetia compressa* were abundant and robust. *Chondracanthus canaliculatus* and *Mazzaella affinis* dominated the zone below the mussels. *Ulva* sp. and *Cladophora columbiana* were common throughout. Barnacles appeared healthy and cover within barnacle plots ranged from 0-51 in percent cover. The mussel zone was very dense with mussel cover averaging 66% over all mussel plots. *Strongylocentrotus purpuratus* and *Anthopleura elegantissima* were abundant in low-lying areas and tidepools. *Corallina vancouveriensis* was common and *Phragmatopoma californica* appears to be spreading out in the mussel zone. *Tigriopus californicus* were very large and common. *Haliotis cracherodii* were common and obvious with John Ugoretz counting nearly 100 individuals, but only measuring about half that many due to access. Both *Pisaster ochraceus* and *Pisaster giganteus* were observed in a 30-minute search (20 total), conditions were less than optimal for enumerating sea stars. Motile invertebrates were common and diverse. *Nucella emarginata* were abundant as well as *Tegula funebralis*. Several small stars, likely *Leptasterias hexactis,* were observed in mussel plots. Two snowy plovers were observed on the East End of Simonton beach on our hike home.

Photoplot summary-Mean percent cover by zone in fixed photoplots at Otter Harbor (5plot/zone)

Zone	Bare Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
Barnacle	28.6	28.6	0.0	0.0	0.0	39.0	0.6	3.2
Endocladia	13.0	3.6	39.0	22.4	0.8	20.8	0.4	0.0
Rockweed	21.6	12.8	18.6	36.6	0.0	8.6	0.8	1.0
Mussels	4.0	1.2	0.0	0.0	66.2	22.0	6.6	0.0

Owl limpet plot summary at Otter Harbor, November 2000 (size in mm)

Plot	Count	Mean Size	StDev	Min Size	Max Size	%<20 mm	%20-29mm	%30-39mm	%40-49mm	%50-59mm	%60-69mm	%70-79mm	%80-89mm	%90-99mm
368	11	44.6	18.2	24	81	0%	18%	36%	0%	18%	18%	0%	9%	0%
369	41	46.7	14.7	25	81	0%	15%	20%	22%	20%	17%	5%	2%	0%
496	3	40.0	11.8	30	53	0%	0%	67%	0%	33%	0%	0%	0%	0%



Black Abalone plot summary at Otter Harbor, November 2000

Plot	Count	MeanSize (mm)	StDev	Min Size	Max Size	%<45mm	%45-126mm	%127-145mm	%>145mm
1	0	-	-	-	-	-	-	-	-
2	0	-	-	-	-	-	-	-	-
3	0	-	-	-	-	-	-	-	-
4	0	-	-	-	-	-	-	-	-
5	2	63.00	21.21	48	78	0.00%	100.00%	0.00%	0.00%
GS	34	91.65	24.16	45	142	0.00%	94.12%	5.88%	0.00%

GS = 30- minute general search of the monitoring site

SMOH fall 2000 Motile Invertebrate Count

zone	Barnacle					Endocladia					Silvetia					Mytilus				
plot #	370	371	372	373	374	360	361	362	363	364	355	356	357	358	359	375	376	378	379	380
Lepidochitona spp.							1		4			1								
Nuttalina spp.							1	2	5	1		1	2			4	1	2	2	2
Fissurella volcano																			1	
Pachygrapsus							1					1								1
Limpets>1cm			7	1		2	4		3	3		4	3	1	1	1				
S. purpuratus										1										
Nucella emarginata		1					1	1		1		6				16	17	4	12	2
Acanthina spp.									1			1					1			
Tegula funebralis			1		44	6	2		1	13		1	1		1	1	4			
Ocenebra circumtexta										1		1					1			2
Lottia gigantea							1	2			1		1			6	6	9	10	3
Littorina spp.	10-100	>100		>100		>100	10-100		10-100		10-100	<10	<10	10-100	>100		<10			
Pisaster ochraceus																				4

November 26, 2000, Harris Point - low tide -0.5 @1618 hrs, air temp. 17°C, water temp. 12.5°C, wind NNW 10 mph, skies clear, wave height 6-10 ft., surge heavy. On site from 1345-1630 hrs. One harbor seal was observed offshore and five black oystercatchers occupied the monitoring site on arrival.

Large waves and heavy surge persisted throughout monitoring and greatly affected the general search for black abalone and seastars. Barnacle cover was highly variable within photoplots. *Endocladia muricata* was common throughout the site and well represented within plots. *Silvetia compressa* was absent from the entire site and *Hesperophycus californicus* was common with most plants small and physically tattered. Mussels in plots were abundant and healthy. Few abalone were measured in plots and two plots had no individuals at all. A 30-minute search of the area was performed finding 28 abalone of which, 11 were not measurable. A survey of the surge channel near plot 424 and 435 contained only four abalone and 3 seastars (two *Pisaster ochraceus* and one *Asterina miniata*). Plot species census and a 15-minute general species list were performed. Motile invertebrates were common throughout the site, especially *Nucella emarginata*, *Ocenebra circumtexta* and *Nuttalina californica*. The temperature logger has been missing since the Fall 1999 sampling. *Tegula funebralis* was common in the low tide areas as well as *Chondracanthus canaliculatus*, *Mazzaella affinis* and *Laurencia pacifica*. *Ulva* sp. and *Cladophora columbiana* were uncommon. *Egregia menziesii* was abundant in surge channels and cobble areas. Two fresh red abalone shells were found (42, 49mm). Conditions were less than favorable for intertidal work.

Photoplot summary-Mean percent cover by zone in fixed photoplots at Harris Point (5plots/zone)

Zone	Bare Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
Barnacle	25.4	26.6	3.6	0.0	11.0	31.0	2.4	0.0
Endocladia	30.0	18.4	33.2	9.8	1.6	6.4	0.6	0.0
Rockweed	39.4	5.4	19.4	28.6	0.0	6.2	0.6	0.4
Mussels	27.4	8.0	1.2	0.0	46.2	15.4	1.8	0.0

SMHP Motile Invertebrates fall 2000

zone	Barnacle	Endocladia				Hesperophycus					Mytilus						Tetraclita			
plot #	440	431/446	432	433	434	435	421	422	423	424	425	426	427	428	429	430	436	437	438	439
Lepidochitona spp.		1				1					2						1		2	1
Nuttalina spp.		2											3			3	10	31	2	3
Pachygrapsus															1	1				
Limpets>1cm		1				1	3						2	4					8	2
S. purpuratus															10	4				
Nucella emarginata		5				3			1		3	14	5	4	10	3	42	11		6
Ocenebra circumtexta		1							1				1	2			1	2	1	14
Lottia gigantea		1										4		1	2	2	10	6		
Littorina spp.	<10		<10	10-100	>100		10-100	>100		10-100	<10		<10	<10	<10	<10				<10

Black Abalone plot summary at Harris Point, November 2000

Plot	Count	Mean Size (mm)	StDev	Min Size	Max Size	%<45mm	%45-126mm	%127-145mm	%>145mm
1	0	-	-	-	-	-	-	-	-
2	0	-	-	-	-	-	-	-	-
3	5	98	22.99	64	120	0.00%	100.00%	0.00%	0.00%
4	1	126		126	126	0.00%	100.00%	0.00%	0.00%
5	1	137		137	137	0.00%	0.00%	100.00%	0.00%
30-min search	17	96	36.04	42	156	5.88%	64.71%	17.65%	11.76%

November 27, 2000, Cuyler Harbor- low tide -0.4 @ 1655 hrs. air temp. 14°C, water temp. 12.5°C, wind NW 10-20 mph, skies clear, waves 6-10 ft. and surge heavy. On site from 1500 - 1730 hrs. No marine mammals were observed at or near this monitoring site and only one black oystercatcher was observed.

Arrived on site at approximately 1400 hrs, but the high surf and surge created hazardous working conditions. The mussel plots were awash throughout sampling. Overall the site appeared healthy and undisturbed. Barnacle plots ranged from 20-55% cover. *Endocladia muricata* was common at the site but patchy within plots. *Silvetia compressa* cover was high, averaging 85% in plots, and the majority of plants were healthy and lush. Mussels were abundant in the low intertidal zone and no new recruitment was noted. Motile invertebrates were both abundant and diverse. *Nucella emarginata*, *Lepidochitona hartwegii* and *Tegula funebralis* counts were high when compared to all other San Miguel Island monitoring locations. No abalone and only five *Pisaster ochraceus* were observed during a 30-minute search of the area. *Phragmatopoma californica* continues to dominate areas previously occupied by black abalone. Very little green algae were observed, in contrast to all other SMI sites. *Chondracanthus canaliculatus*, *Mazzaella affinis* and *Prionitis lanceolata* were abundant in the lower intertidal. *Tegula funebralis* was abundant and a wide range of sizes observed. Willets, Surf scooters and Western gulls were observed on Cuyler Beach. Nightfall limited the scope of work. No species census in plots was performed and only 10 minutes of general species list was taken.

Photoplot summary-Mean percent cover by zone in fixed photoplots at Cuyler Harbor (5plots/zone)

Zone	Bare Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
Barnacle	56.6	40.2	2.8	0.0	0.2	0.0	0.0	0.2
Endocladia	41.4	10.2	28.6	9.0	5.4	4.2	1.2	0.0
Rockweed	9.2	0.0	0.0	85.2	0.2	2.8	2.6	0.0
Mussels	20.2	4.2	0.0	0.0	59.0	5.6	11.0	0.0

SMCH fall 2000 Motile Invertebrate Count

zone	Barnacle zone					Endocladia zone					Silvetia zone					Mussel zone				
plot #	416	417	418	419	420	411	412	413	414	415	406	407	408	409	410	401	402	403	404	405
Lepidochitona spp.					1			10			4	13	6	4	14	1				1
Nuttalina spp.								1					1	1		2	5	5	6	5
Fissurella volcano																				
Pachygrapsus								2							3					2
Limpets >1cm	1					5		9	2		2	4	3	2	3					1
Nucella emarginata		3	1	3	1	6	4				4	3	8	9	7	4	9	8	20	57
Acanthina spp.			2		1		1	6		1	2	1	1	1	1					
Tegula funebralis	2		4		13	14	3	44	1	38	32	34		15	1					
Ocenebra circumtexta											1									
Lottia gigantea											2					1		1	4	10
Littorina spp.		>100	10-100		<10		10-100			<10		<10	<10							

Santa Rosa Island, December 7-13, 2000 (Database event #2000I)

PERSONNEL: Dan Richards, Marine Biologist, Channel Islands National Park
David Kushner, Marine Biologist, Channel Islands National Park
Kate Wing, VIP, Natural Resource Defense Council
Jessica Hayden-Spear, VIP, student, MMS intern

PROCEDURE: general procedures are outlined in the Intertidal Monitoring Handbook (Richards and Davis 1988). We arrived on the OCEAN RANGER on Dec. 7. At each site the photoplots were photographed and scored in the field. Motile invertebrates were counted within the photoplots. Abalone plots were checked and a 30-minute search was made for abalone. Seastars were monitored either in transects (Johnson's Lee, Ford Point, and Fossil Reef) or in a 30-minute search (East Point and Northwest-Talcott). Download temperature loggers at East Point, Northwest-Talcott, and Johnson's Lee.

RESULTS:
December 7, 2000, East Point, low tide 0.6 ft at 1323, Air Temperature 22 °C, water temp. 16°C. wind NW 5 mph, seas calm, surge light. We were on site from 1400-1700 hrs. under excellent conditions.

Approximately 100 harbor seals were observed at Abalone Rocks (no actual count). Only one Black Oystercatcher was present on the site. The site was easily workable on the incoming tide. There were problems with the strobes so the plots were shot with one strobe or none. (The problem was later fixed with new tape over the contacts). Barnacle cover within barnacle plots ranged from 12-46 % cover and averaged 24 % cover. *Endocladia muricata* plots average nearly 53% cover of *Endocladia sp*. and appeared healthy. *Silvetia compressa* cover was fairly thick though several plants appeared tattered. *Hesperophycus californicus* was noticeably less dense compared to previous years. Mussel cover within mussel plots was high, with a mean cover of 77%. Motile invertebrates *Nucella emarginata* and *Acanthina sp*. were numerous in plots, with *Nucella sp*. concentrated in mussels plots and *Acanthina sp*. in Rockweed and Endocladia plots. Large limpets, both *Lottia spp*. and *Lottia gigantea*, were uncommon. Kate searched the site for 30-minutes finding 30 ochre stars. No concerted effort was made to look for abalone and none were noticed. The mussel beds looked good with juveniles present. The mussels in photo point 3 do not appear to have changed over the years, as the patch is still dense with small individuals. Returned to East Point on 12/12 to complete general species census and search for abalone. Two abalone were located at the site, both 100-mm. Three more individuals were located west of the site, all between 80-110 mm. Kate counted 90 *Pisaster ochraceus* on the monitoring reef in 30 minutes; the tide was much lower than on 12/7. Numerous purple urchins' *Strongylocentrotus purpuratus* were observed with wasting disease.

Photoplot summary – Mean percent cover by zone at East Point (5plots/zone)

Site	Zone	Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
EP	Barnacle	60.2	24.0	9.2	4.8	0.2	1.6	0.0	0.0
EP	Endocladia	28.4	4.8	52.8	10.8	0.0	2.2	1.0	0.0
EP	Rockweed	7.8	0.2	1.2	79.6	0.0	10.6	0.6	0.0
EP	Mussels	1.4	0.4	0.0	0.0	77.0	15.6	5.6	0.0

SREP fall 2000 Motile Invertebrate Counts

zone	Barnacle					Endocladia					Silvetia					Mytilus				
plot #	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594
Lepidochitona spp.		1						2			9	4	13	8	6					2
Nuttalina spp.											1	1				19	3		1	3
Fissurella volcano																	1			1
Pachygrapsus											2	2	3		1	2	1			
Pagurus spp.		8									17	5	12	2						
large limpets(>15mm)	5	1							1		2	2		2	2					
S. purpuratus		1																2		1
Amphissa versicolor						1				1			5							
Nucella emarginata		1	4			1	8	2	9	3		5	1		4		2	16	3	26
Acanthina spp.		4				9	10	7	12	3	18	6	14	13	11		2			1
Tegula funebralis		28				3	1	28	17	2	28	31	37	3	4					
Lottia gigantea																				3
Littorina spp.	>100	>100	>100	>100	>100		>100	>100	>100	>100					<10		1			50

December 8, 2000, Fossil Reef, low tide 0.0 at 1401 hrs, air 16°C water 14.5°C, wind SW at 5 mph, seas calm, surf 2-3 ft, surge moderate and washing the outer reef. We were on site from 1030-1600 hrs.

A thick low marine layer gave us drizzle for an hour or so and kept it cool. There were no pinnipeds on the site but approximately 150 elephant seals and about 50 harbor seals were on the long beach west of the monitoring location. Seabirds at the site included 6 Black Oystercatchers, 1 Black Turnstone, 35 cormorants, 2 Brown Pelicans, and 3 Western Gulls.

Chthamalus sp. dominated most of the barnacle plots though some *Balanus* sp. were present in plot 606. *Littorina* sp. were common in all the barnacle plots. *Endocladia muricata* was sparse over most of the site plots and averaged just 9.2% cover within its respective zone. Mussel plots were dominated by *Phragmatopoma californica*, nearly 26% cover. *P. californica* was common throughout, filling in the crevices among the boulders on the west side of the reef. *Chondracanthus canaliculatus* and *Mastocarpus sp.* were both common algae on the outer reef, *Gelidium coulteri* was also present. *Tegula funebralis* was abundant throughout the site. One *Tegula gallina* was found. David found 14 *Haliotis cracherodii* in a 30-minute general search over the main reef. Of the individuals that were measured three were in pairs and one group of seven was located in the tagging area during a separate 25-minute search. *Phyllospadix* sp. was very short, 4-10 inches and many of the plants were flowering. *Pagurus* spp. (mostly *P. samuelis*) was abundant. *Petrolisthes* sp. was common under rocks. Overall seastars densities appeared low but individuals were present in the boulder area and more common below the east side of the seastar transect. The seastar transect on the outer reef was only 15m x 6m because of wave overwash. A total of 12 *Pisaster ochraceus* and four *H. cracherodii* were observed.

Photoplot summary – Mean percent cover by zone at Fossil Reef (5 plots/zone)

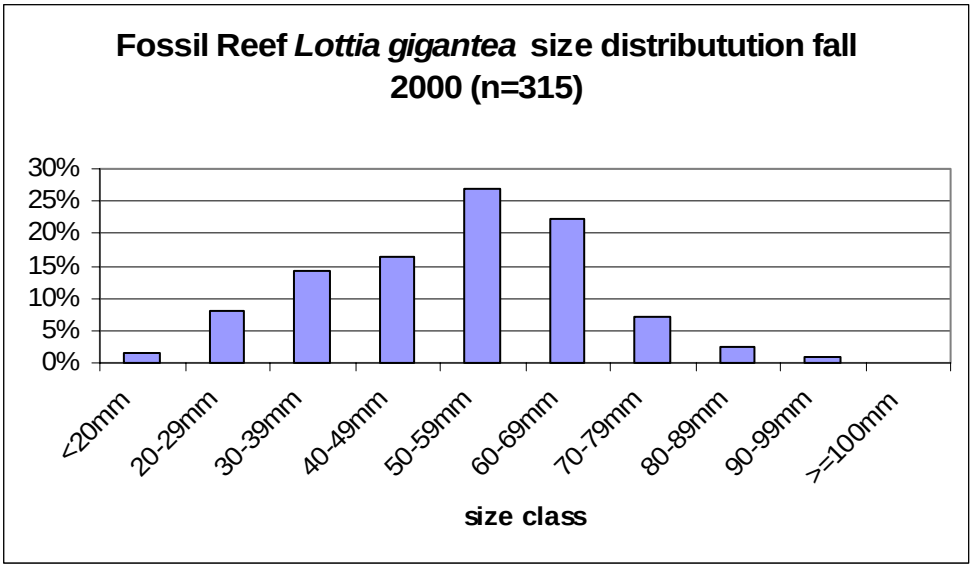
Site	Zone	Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
FR	Barnacle	68.4	28.2	0.2	0.0	0.0	1.4	0.6	1.2
FR	Endocladia	43.8	13.2	9.6	31.4	0.0	1.0	1.0	0.0
FR	Rockweed	68.0	3.0	3.8	7.8	0.2	15.6	1.6	0.0
FR	Mussels	9.0	8.8	0.0	0.0	24.8	31.6	25.8	0.0

Owl Limpet *Lottia gigantea* plot summary at Fossil Reef

Plot	Count	Mean size (mm)	StDev	Min	Max
1	24	52.25	16.49	24	75
2	29	48.28	13.09	20	73
3	52	60.56	18.13	22	95
4	98	52.90	14.62	15	81
5	112	47.14	13.57	15	71

Owl Limpet *Lottia gigantea* size distribution within plots at Fossil Reef

Plot	%<20mm	%20-29mm	%30-39mm	%40-49mm	%50-59mm	%60-69mm	%70-79mm	%80-89mm	%>90 mm
1	0.00%	8.33%	20.83%	16.67%	8.33%	33.33%	12.50%	0.00%	0.00%
2	0.00%	10.34%	20.69%	13.79%	37.93%	10.34%	6.90%	0.00%	0.00%
3	0.00%	3.85%	9.62%	15.38%	15.38%	21.15%	17.31%	11.54%	5.77%
4	3.06%	7.14%	8.16%	12.24%	31.63%	30.61%	5.10%	2.04%	0.00%
5	1.79%	9.82%	18.75%	21.43%	29.46%	16.07%	2.68%	0.00%	0.00%



SRFR fall 2000 Motile Invertebrate Counts

zone	Barnacle					Endocladia					Mussel					Silvetia				
plot #	605	606	607	608	609	610	611	612	613	614	620	621	622	623	624	615	616	617	618	619
Lepidochitona spp.						1		9	2	12				2						
Nuttalina spp.										1	55	95	49	39	2					
Fissurella volcano														1						
Pachygrapsus								2		2	1	5								
large limpets(>10mm)		1						4		6	3					7	3	10	3	
S. purpuratus											61	10	10	4	54					
Nucella emarginata											3	10	24	12						
Acanthina spp.		2			3	7		1	15	7						2	3	1		2
Tegula funebralis		3			5	14		134	33	55						15	56	52	42	12
Ocenebra circumtexta											2									
Lottia gigantea													5	16						
Leptasterias hexactis											1		1							
Littorina spp.	>100	>100	>100	>100	>100	>100	>100	<10		<10							10-100	<10		
Mopalia muscosa															1					

December 9, 2000, Northwest-Talcott, low tide –0.6 ft at 1441, air temp. 15°C, water temp. 15°C, wind NW at 2 mph, seas calm with 3-4 ft surf, surge light. We were on site from 1130-1500 hrs under cloudy skies and excellent sampling conditions.

Dark low clouds over San Miguel Island and the prediction of rain caused us to wrap up early and head back across the island, no precipitation materialized. The site appeared unchanged since the last visit with the exception of the increased presence of tar. Barnacle plots appeared to be dominated by *Balanus* sp. with some *Chthamalus* sp. mixed in. Barnacle plots averaged 32.6 % cover of acorn barnacles. *Endocladia muricata* was very sparse throughout the site. Large *Silvetia compressa* plants were common but there were some large gaps in areas. *Mytilus californianus* and *Pollicipes polymerus* were abundant in plots. Plots 558 and 559 do not appear to be *Endocladia* plots anymore. No abalone were observed in plots and only 6 were found in a 30-minute general search of the area. Typical for this site, many Owl limpets were large in size (> 69 mm). Four *Asterina miniata* and five *Pisaster giganteu*s were observed in a 30-minute search. Algae were lush in the lower intertidal and *Phyllospadix* sp. was abundant and flowering. *Tegula* sp. were abundant in the lower flats and hermit crabs and octopus under rocks.

Photoplot summary – Mean percent cover by zone at Northwest Talcott (5plots/zone)

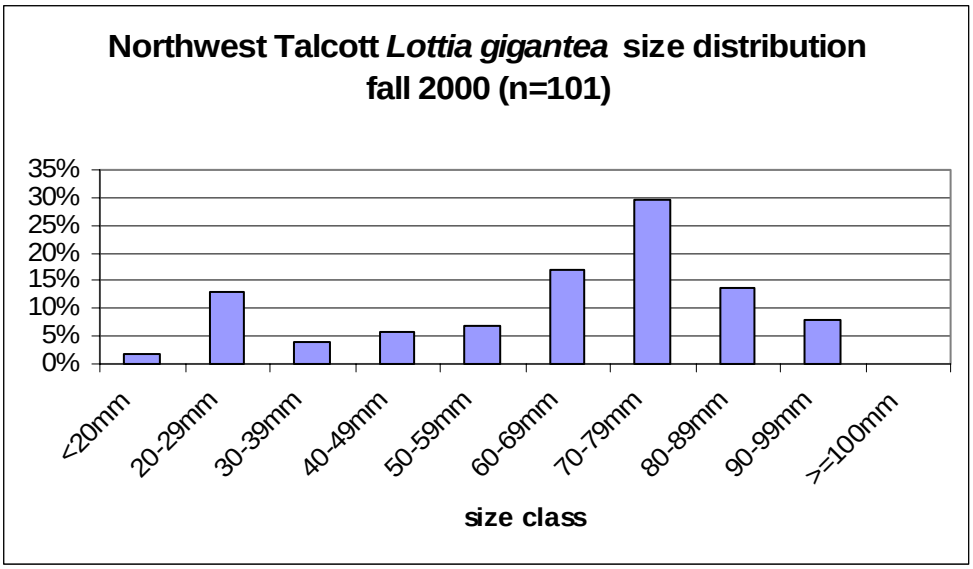
Site	Zone	Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
NWT	Barnacle	49.2	32.6	1.6	12.8	0.0	1.0	1.8	1.0
NWT	Endocladia	45.8	8.0	8.4	24.0	0.4	11.8	1.6	0.0
NWT	Rockweed	28.2	0.4	2.6	63.0	0.0	4.4	1.4	0.0
NWT	Mussels	13.4	4.6	0.2	0.0	59.2	12.6	10.0	0.0

Owl Limpet *Lottia gigantea* plot summary at Northwest Talcott

Plot	Count	Mean size (mm)	StDev	Min	Max
701	23	76.22	19.06	24	98
702	24	65.50	24.86	15	99
703	26	54.85	21.45	15	80
704	18	59.11	20.11	21	85
705	10	61.30	12.19	34	74

Owl Limpet *Lottia gigantea* size distribution within plots at Northwest Talcott

Plot	%<20mm	%20-29mm	%30-39mm	%40-49mm	%50-59mm	%60-69mm	%70-79mm	%80-89mm	%>90 mm
701	0.00%	4.35%	4.35%	4.35%	4.35%	4.35%	21.74%	34.78%	21.74%
702	4.17%	16.67%	0.00%	0.00%	4.17%	12.50%	37.50%	12.50%	12.50%
703	3.85%	19.23%	7.69%	7.69%	11.54%	11.54%	34.62%	3.85%	0.00%
704	0.00%	16.67%	0.00%	11.11%	5.56%	33.33%	22.22%	11.11%	0.00%
705	0.00%	0.00%	10.00%	10.00%	10.00%	40.00%	30.00%	0.00%	0.00%



SRNWT fall 2000 Motile Invertebrate Counts

zone		Barnacle				Endocladia					Silvetia					Mytilus				
plot #	560	561	562	563	564	555	556	557	558	559	565	566	567	568	569	550	551	552	553	554
Lepidochitona spp.				7						1	1	1	6							
Nuttalina spp.									4							5	4	3	17	19
Fissurella volcano																	3		1	2
Pachygrapsus				1										1	1	13	8	10	2	4
Pagurus spp.																				
large limpets(>15mm)				7	2	1			1	2	4	2	1	1						2
S. purpuratus																	3	1		2
Amphissa versicolor														1						
Nucella emarginata									6	4						12	7	13	7	7
Acanthina spp.				1					2	2		1	1							
Tegula funebralis				3	4	1		15			1	2	7							
Tegula gallina												1	3							
Ceratostoma nuttali																				
Ocenebra circumtexta								1	2	5						30	16	1		4
Lottia gigantea			1						1	5						4	3	2	6	5
Leptasterias hexactis																	1			
Littorina spp.	>100	<100	<10	<10							10-100			<10						

December 10, 2000, Johnson's Lee, low tide –1.1 ft at 1522 hrs, air temp. 20°C, water temp. 15°C, wind W at 5 mph, seas calm, surf 1-3 ft surge light, partly cloudy, excellent conditions.

Balanus glandula dominated most of the barnacle plots with *Chthamalus* sp. present. *Endocladia muricata* appeared healthy were it was present and rockweeds were absent, typical for this site. Mussel plots were diverse in their assemblage of species with *Phragmatopoma californica* dominating three of the five plots. Sand movement was evident and extensive with several areas completely covered. *P. californica* densities within plots especially 510 and 511 increased significantly from 1999 and likely benefited from the increased presence of sand. *Lottia gigantea* densities in plots were low compared to previous years with *Balanus sp*. and *Nemalion helminthoides* growing within plots. Small *Lottia gigantea* were observed as well as numerous *Lottia digitalis*. Large *Anthopleura xanthogramica* and solitary *A. sola* were observed. Seastars, *Pisaster*

ochraceus were abundant especially on the eastern half of the site. Two *Haliotis cracherodii* were measured over the entire site during a 30-minute general search.

Photoplot summary – Mean percent cover by zone at Johnson's Lee (5plots/zone)

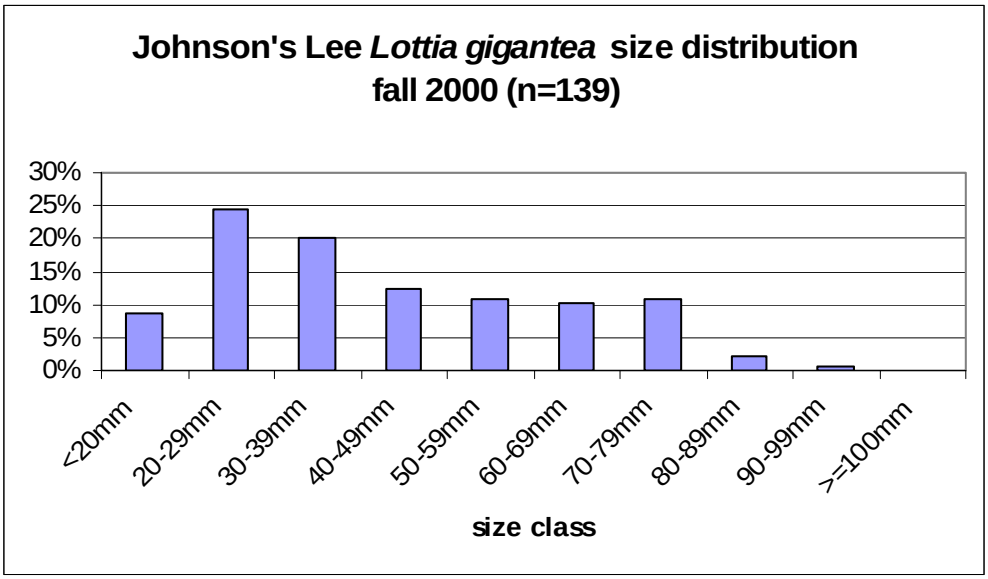
Site	Zone	Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
JL	Barnacle	51.0	40.0	7.0	0.0	0.0	0.6	1.4	0.0
JL	Endocladia	36.8	4.4	40.4	0.0	11.6	4.4	2.4	0.0
JL	Mussels	16.6	1.2	0.0	0.0	13.8	21.0	47.4	0.0

Owl Limpet *Lottia gigantea* plot summary at Johnson's Lee

Plot	Count	Mean size (mm)	StDev	Min	Max
595	11	41.27	13.03	27	62
596	35	47.11	25.48	15	82
597	5	44.00	21.90	15	70
598	40	42.85	18.77	18	90
599	48	37.79	15.73	15	70

Owl Limpet *Lottia gigantea* size distribution within plots at Johnson's Lee

Plot	%<20mm	%20-29mm	%30-39mm	%40-49mm	%50-59mm	%60-69mm	%70-79mm	%80-89mm	%>90 mm
595	0.00%	18.18%	36.36%	18.18%	9.09%	18.18%	0.00%	0.00%	0.00%
596	20.00%	22.86%	2.86%	5.71%	2.86%	11.43%	28.57%	5.71%	0.00%
597	20.00%	0.00%	20.00%	20.00%	0.00%	20.00%	20.00%	0.00%	0.00%
598	2.50%	17.50%	37.50%	12.50%	12.50%	5.00%	7.50%	2.50%	2.50%
599	6.25%	35.42%	14.58%	14.58%	16.67%	10.42%	2.08%	0.00%	0.00%



SRJL fall 2000 Motile Invertebrate Counts

zone	Barnacle						Endocladia					Mussel			
plot #	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514
Lepidochitona spp.													1		
Nuttalina spp.				1	3			2		2	2		4	1	
Fissurella volcano											2				1
Pachygrapsus							1			2	6	2	4	6	1
Pagurus spp.															
Limpets (>1cm)			2					3	7				2		
S. purpuratus											4				2
Amphissa versicolor															
Nucella emarginata		2		8	36	3	4	11		6	1	1	17		
Acanthina spp.											2				
Tegula funebralis						1				6		1			
Tegula gallina										1					
Ocenebra circumtexta															
Lottia gigantea						4		3	4	1			1		
Leptasterias hexactis												1			
Littorina spp.	>100	>100	>100	>100	<10	10-100	10-100	10-100	10-100				10-100	3	

December 11, 2000, Ford Point, low tide –1.3 ft at 1607 hrs, air temp. 17°C, water temp. 14.5°C, wind W at 8 mph. Seas calm, surf 2-3 ft, surge light. Worked at monitoring site from 1230-1630 hrs.

Excellent tide and working conditions prevailed throughout the day. All of the plots were easily found. *Balanus* sp. dominated most of the barnacle plots while *Chthamalus sp*. dominated plots 522 and 524. *Endocladia muricata* appeared healthy in plots but the zone in narrow and not very extensive at this site. Mussel cover is higher here than at Johnson's Lee despite high seastar density. This site like all the others visited this week, has numerous juvenile *Pachygrapsus sp*. *Lottia gigantea* density appeared unchanged from the last several samplings, though their numbers remain lower than the initial sampling years. *Lottia digitalis* was very abundant both in and out of plots. Three seastar transects of 10m x 2m placed in the highest density areas produced total counts of 63, 39, and 19 *Pisaster ochraceus*. David found 3 *H. cracherodii* in a 30-minute general search of the area; measured individuals were 107, 111, and 125 mm.

Photoplot summary – Mean percent cover by zone at Ford Point (5plots/zone)

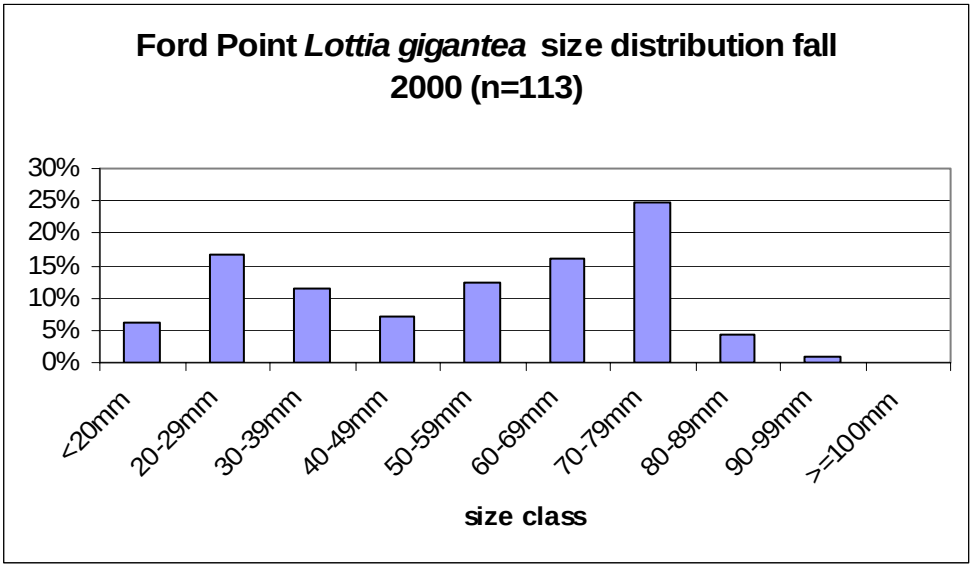
Site	Zone	Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
FP	Barnacle	60.8	26.0	7.4	0.0	0.2	3.4	2.2	0.0
FP	Endocladia	30.6	4.6	29.2	0.0	5.2	28.8	1.6	0.0
FP	Mussels	25.8	1.0	0.2	0.0	48.8	18.4	5.8	0.0

Owl Limpet *Lottia gigantea* plot summary at Ford Point

Plot	Count	Mean size (mm)	StDev	Min	Max
600	20	55.05	20.84	18	78
601	15	57.47	15.79	26	76
602	23	58.83	22.02	17	90
603	22	56.09	24.60	18	87
604	33	40.42	18.10	17	81

Owl Limpet *Lottia gigantea* size distribution within plots at Ford Point

Plot	%<20mm	%20-29mm	%30-39mm	%40-49mm	%50-59mm	%60-69mm	%70-79mm	%80-89mm	%>90 mm
600	5.00%	20.00%	0.00%	10.00%	15.00%	10.00%	40.00%	0.00%	0.00%
601	0.00%	6.67%	13.33%	0.00%	13.33%	46.67%	20.00%	0.00%	0.00%
602	8.70%	8.70%	4.35%	0.00%	17.39%	21.74%	26.09%	8.70%	4.35%
603	9.09%	18.18%	4.55%	4.55%	4.55%	13.64%	36.36%	9.09%	0.00%
604	6.06%	24.24%	27.27%	15.15%	12.12%	3.03%	9.09%	3.03%	0.00%



SRFP fall 2000	Motile Invertebrate Counts														
zone		Barnacle						Endocladia					Mussel		
plot #	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534
Lepidochitona spp.		2				1	1								2
Nuttalina spp.						2	3	1	1	5	3			1	10
Fissurella volcano												5			
Pachygrapsus		2				3	3				2	7	4	1	3
Pagurus spp.															
Limpets (>1cm)											4				3
S. purpuratus													3		
Amphissa versicolor															
Nucella emarginata		1				1	1				4	12	20	36	7
Acanthina spp.															
Tegula funebralis									1					6	1
Tegula gallina															
Ceratostoma nuttali															
Ocenebra circumtexta						1			1					1	
Lottia gigantea	2							2	6	3	4	1		1	2
Leptasterias hexactis															
Littorina spp.	>100	>100	>100	>100	>100	10-100	>100	10-100	10-100					10-100	<10

Santa Cruz Island, January 5-9, 2001 (Database event #2000-J)

PERSONNEL: David Kushner, Marine Biologist, Channel Islands National Park
Derek Lerma, Biological Technician, Channel Islands National Park
Steve Goode, Volunteer, Channel Islands National Park

PROCEDURE: Departed park headquarters at 0830 hrs. via the Pacific Ranger arriving at Prisoners Harbor at approximately 1100 hrs. Unloaded personnel and gear prior to Steve and I beginning sampling the monitoring site at Prisoners Harbor. Dan Richards and David Kushner went on to Orizaba Cove to monitor that site concurrently. David Kushner returned to Prisoner's Harbor several hours later and helped finish the last aspects of sampling and load gear for transportation to the UC field station. Dan returned to Ventura. Traveled to the West End on 1/6 to set up camp at the trailer site and monitor both Trailers and Frazer/Forney's Cove. Returned to UC field station late on 1/7. Santa Cruz Island received 0.62 inches of rain the night of the 7th forcing us to hike to Willows Anchorage in order to complete the monitoring. Departed the island 1/9 via Channel Islands Aviation (courtesy of TNC) as all boat transportation was cancelled due to heavy surf advisories. Pig disturbance was overwhelming and everywhere.

RESULTS:
Prisoners Harbor, January 5, 2001, low tide 0.3 ft. @1256 hrs., Air temp. 19°C, water temp. 14°C, Skies mostly clear, wind < 5mph ESE, Waves 1-2 ft., surge light. On site from 1130 to 1530 performing all standard monitoring including motile invertebrate counts within photoplots and making a 20-min. general species census of the site. One Bonaparte's Gull was observed on site as well as one harbor seal just offshore.

Barnacle cover appeared good with obvious recruitment in several plots and zones. *Endocladia muricata* was restricted to a narrow one-meter band and was healthy. Rockweeds *Hesperophycus californicus* and *Silvetia compressa* were common within their respective zones and appeared healthy but tattered. Mussels within the mussel zone looked healthy with some recent disturbance observed. The proximity of the mussel plots to the adjacent cobble beach as well as its aspect with respect to the prominent NW swell make disturbance from winter swells common and predictable. No abalone and only two *Pisaster ochraceus* were found during a 20-minute search of the entire site. Motile invertebrate numbers appeared elevated from previous visits. *Acanthina* spp. and *Ocenebra* sp. were abundant overall but especially so in mussel plots. Large aggregations, 5-10 individuals, within a small area (5cm ^{2}) were common in mussel plots. These aggregations may be related to a natural history behavior of the snails, as whelks commonly congregate for breeding purposes. *Littorina* spp. were also abundant throughout the site and recruitment was evident near the *Hesperophycus* plots. Overall the site appeared healthy and robust. Algae were diverse and well represented. *Endarachne binghamiae* was common as well as turf reds *Gelidium coulteri*, *Mazzaella affinis*, and *Laurencia* spp. *Prionitis lanceolata* and *Chondracanthus spinosus* were common mixed in with the turf reds, in the lower intertidal areas.

Photoplot summary – Mean percent cover by zone at Prisoners Harbor (5plots/zone)

Site	Zone	Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal
PH	Barnacle	52.8	13.6	7.2	7.2	0.2	17.8	1.2
PH	Endocladia	20.0	21.6	48.6	4.0	0.0	5.4	0.4
PH	Silvetia	1.4	0.0	0.0	89.4	0.0	8.8	0.4
PH	Mussels	5.8	3.4	0.0	0.0	79.2	9.2	2.4
PH	Hesperophycus	46.2	18.4	20.0	12.2	0.0	2.2	1.0

SCPH Motile Invertebrate Counts fall 2000

zone	Barnacle						Endocladia					Hesperophycus			
plot #	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840
Lepidochitona spp.			1								1	1	1		
Nuttalina spp.					1					1					
Fissurella volcano															
Pachygrapsus									1						
large limpets(>10mm)		2	6									1	2		
S. purpuratus															
Nucella emarginata								1	1	1					
Acanthina spp.		1					1			1	1	1			
Tegula funebralis										2					
Ocenebra circumtexta				2			5		4	5	5	1	11		
Lottia gigantea															
Littorina spp.			>200	>200	>100	>200		>200	>100	>100	>100	>100	<100	>100	>100

SCPH Motile Invertebrate Counts fall 2000

zone	Mytilus							Silvetia		
plot #	841	842	843	844	845	846	847	848	849	850
Lepidochitona spp.					2	15	4	3	4	4
Nuttalina spp.	1	2		5	5		3		2	
Fissurella volcano		2		1	1					
Pachygrapsus										
large limpets(>10mm)					1	8	8	8	4	7
S. purpuratus										
Nucella emarginata	7	1	6		7				1	
Acanthina spp.	39	61	11	6	7	2	2	8	3	2
Tegula funebralis								1	3	
Ocenebra circumtexta	14	3	4	13	11				1	
Lottia gigantea										
Littorina spp.									17	>100

Fraser/Forney's Cove January 6, 2001, low tide -0.4 ft. @1339, Air temp. 13.5°C, Water temp. 14.0°C, Skies clear, winds 5-10 mph NW, Waves 4-6 ft. and surge heavy. On site from 1130 to 1630 performing all standard monitoring including motile invertebrate counts within photoplots and a 20-min. general species census. Four Black Oystercatchers and one Western Gull were observed at Fraser Cove and three Western Gulls were observed at Forney's cove.

Upon arrival, algal bleaching was obvious and widespread in the *Endocladia muricata* and *Phyllospadix* spp. zones and among various red algae. Evidence of storm disturbance was visible within the mussel zone with several areas missing small patches ($10cm^2$). Overall the mussel plots and zone appeared healthy but patchy. Noticeable sand deposition was evident in the large upper tidepools. Barnacle cover looked unchanged from previous years although with close inspection heavy recruitment was obvious in both the Barnacle and Tar plots. *Endocladia muricata* was abundant and well established and bleaching affected approximately 60% of the plants. Hot dry weather, accompanied by strong Santa Ana winds was likely a major factor in the bleaching of several algal species at two separate sites during this sampling event. No abalone and only one *Pisaster ochraceus* were observed during a complete search of the monitoring site. *Lottia gigantea* density within plots seemed low compared to previous years and small (<25mm) individuals were rare. Surfgrass transects remain dominated by *Phyllospadix* spp. and bleaching was extensive. Motile

invertebrates were common with *Littorina* spp. abundant and well distributed. Juvenile *Nucella emarginata* were abundant in mussel plots.

Departed Fraser site for Forney's at 1500. Rockweeds were abundant but visibly tattered. Extensive bleaching similar to Fraser cove was widespread and dominated much of the algal zone, excluding the rockweeds. Higher than normal sand levels in the cobble areas east of the monitoring site were notable. *Tegula funebralis* and *Lepidochitona sp*. were much more abundant than at the Fraser Point site, likely due to the presence of rockweeds at the Forney's site. *Lottia strigatella* were common and conspicuous. *Phragmatopoma californica* was common and appears to be expanding throughout this site. *Ulva* sp. was also common at this site, but not in photoplots. One fresh black abalone shell was found measuring 60 mm but no live abalone or seastars were observed during a general species census of the area.

Photoplot summary – Mean percent cover by zone at Fraser Cove (5plots/zone)

Site	Zone	Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal	Tar
FC	Barnacle	52.6	29.8	10.2	0.0	1.0	4.4	0.8	1.2
FC	Endocladia	38.6	11.8	37.4	4.0	1.2	6.4	0.6	0.0
FC	Silvetia	18.2	1.8	3.0	66.6	0.0	9.4	1.0	0.0
FC	Mussels	13.6	0.4	0.0	0.0	63.8	2.4	19.8	0.0
FC	Pollicipes	16.6	7.8	3.0	0.0	28.6	6.4	37.6	0.0
FC	Tar	33.0	16.2	0.0	0.0	0.0	0.0	0.0	50.8
FC	Hesperophycus	59.6	6.6	7.0	24.0	0.0	2.8	0.0	0.0

SCFC fall 2000 Motile Invertebrate Counts

zone	Barnacle					Endocladia					Hesperophycus				
plot #	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890
Lepidochitona spp.							1								
Nuttalina spp.	1					1				1			1		
Fissurella volcano															
Pachygrapsus												3			
large limpets(>10mm)								2			1		1	4	1
Nucella emarginata	2	1				6	2	3	1				2		
Acanthina spp.			1	1								3		1	4
Tegula funebralis	2		8	4		2		2		1	1	9		1	23
Mopalia sp.															
Lottia gigantea															

SCFC fall 2000 Motile Invertebrate Counts

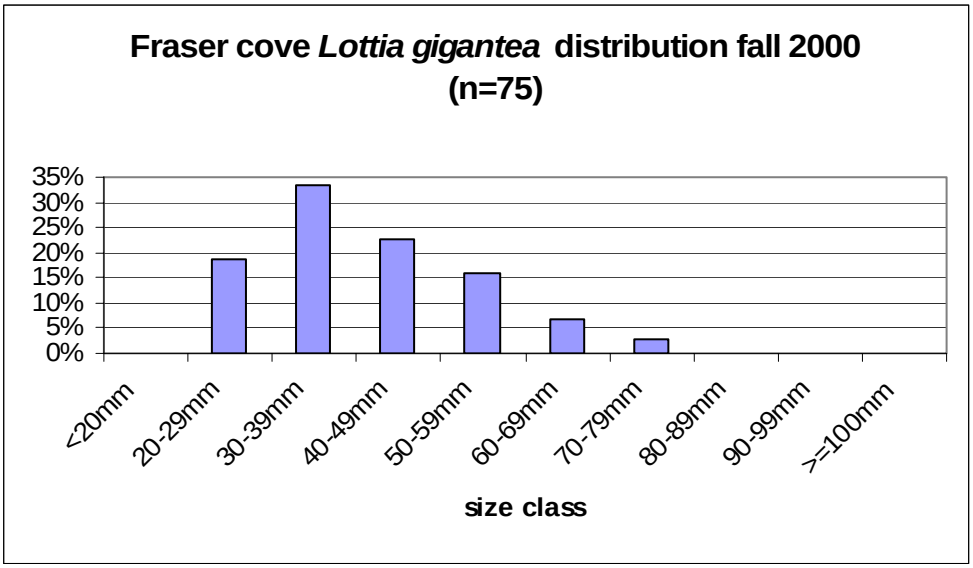
zone	Silvetia					Mussel					Pollicipes				
plot #	896	897	898	899	900	891	892	893	894	895	901	902	903	904	905
Lepidochitona spp.	3		8	5	4									1	
Nuttalina spp.						2						3	2	4	1
Fissurella volcano									1						
Pachygrapsus						1	2	2				2			
large limpets(>10mm)	1	4	1	4	14		2				1				
Nucella emarginata				1		6	13	14	13	19	9	7	8	10	5
Acanthina spp.		2	2		4	1				1			1		
Tegula funebralis	15	10	12	25	1										
Mopalia sp.					1										
Lottia gigantea							5				2	2			

Owl Limpet *Lottia gigantea* plot summary at Fraser Cove

Plot	Count	Mean size (mm)	StDev	MinSize	MaxSize	Density
1	11	52.82	16.42	28	79	3.502
2	7	53.71	13.85	30	72	2.229
3	18	38.22	8.33	24	55	5.731
4	23	32.96	6.57	24	50	7.323
5	16	44.19	10.03	27	58	5.094

Owl Limpet *Lottia gigantea* size distribution within plots at Fraser Cove

Plot	%<20mm	%20-29mm	%30-39mm	%40-49mm	%50-59mm	%60-69mm	%70-79mm	%>80mm
1	0.00%	9.09%	9.09%	27.27%	9.09%	36.36%	9.09%	0.00%
2	0.00%	0.00%	14.29%	14.29%	42.86%	14.29%	14.29%	0.00%
3	0.00%	16.67%	44.44%	33.33%	5.56%	0.00%	0.00%	0.00%
4	0.00%	34.78%	47.83%	13.04%	4.35%	0.00%	0.00%	0.00%
5	0.00%	12.50%	25.00%	25.00%	37.50%	0.00%	0.00%	0.00%



Surfgrass transects

Location: Fraser Cove **Site Code:** SCFC			
Date: 6-Jan-01			
Recorders: David Kushner			
Surf Grass Taxa	Transect 1	Transect 2	Transect 3
Rock	5		5
Sand		1	2
Cystoseira/Halidrys		3	
Egregia menziesii		2	
Corallina vancouveriensis	27	3	8
Encrusting coralline	1	1	
Chondracanthus canaliculatus			3
Chondracanthus spinosus	1		
Prionitis spp.	3	1	
other red algae			2
Gastroclonium sp.		7	
Phyllospadix sp.	60	76	69
Mytilus californianus	2	4	
Anthopleura spp.			2
Phragmatopoma californica	1		4
Chthamalus/Balanus		2	5
total	100	100	100

Trailers January 7, 2001 low tide -0.9 ft. @ 1422, Air temp. 15.0°C, Water temp. 14.0°C, Skies partly cloudy, Wind 5-10 mph NW, waves 2-4 ft., Surge moderate. On site from 1230 - 1530 performing standard monitoring protocols as well as motile invertebrate counts within photoplots and a general species census of the area. Five Black Oystercatchers were observed upon arrival.

Barnacle cover within plots appeared low overall and recruitment was evident in several areas. *Endocladia muricata* was common with only sparse bleaching. *Hesperophycus californicus* was common and visibly tattered. *Silvetia compressa* was abundant and lush dominating the rockweed zone. Overall algae were healthy and diverse. The mussel zone showed no obvious signs of disturbance and small individuals (1cm) were common within plots. Thirteen black abalone, ranging in size from 35 to 135 mm, were located in a 30-minute general search of the site. Several of the abalone were found to occur in groups and one individual appeared to be suffering from the withering foot syndrome. Eight seastars, 6 *Pisaster ochraceus*, one *P. giganteus*, and one *Asterina miniata* were observed in a separate 30-minute search of the site. *Lottia gigantea* densities in plots appear healthy and relatively unchanged, with small individuals (<25mm) common in two of the five plots. Motile invertebrates were common and diverse. *Tegula funebralis* was most common overall. *Ocenebra* sp. was rare as was *T. gallina*. Small (<1 cm) *Nucella emarginata* were common in mussel plots. The lower intertidal areas were dominated by several algal species including *Egregia menziesii*, *Prionitis lanceolata*, and several turf reds including *Laurencia* sp., *Mazzaella affinis*, and *Mastocarpus papillata*. *Ulva* sp. and articulated corallines were common throughout the site.

Photoplot summary – Mean percent cover by zone at Trailers

Site	Zone	Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal
TR	Barnacle	69.8	26.2	2.0	0.0	0.2	0.4	1.4
TR	Silvetia	10.0	0.2	0.0	84.8	0.0	4.8	0.2
TR	Mussels	11.8	4.4	0.0	0.0	63.6	9.6	10.6
TR	Hesperophycus	50.8	4.0	11.6	30.6	0.0	2.8	0.2

Trailers fall 2000 Motile Invertebrate count

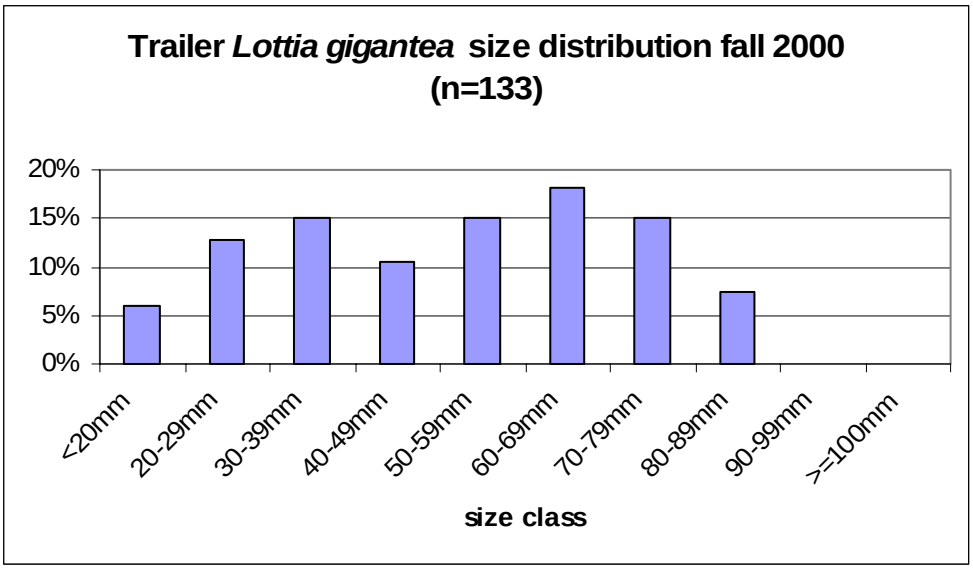
zone	Barnacle					Silvetia					Hesperophycus					Mytilus				
plot #	911	912	913	914	915	926	927	928	929	930	916	917	918	919	920	921	922	923	924	925
Lepidochitona spp.						2	2	3	15	5						1			1	
Nuttalina spp.															1	6	10	7	7	3
Fissurella volcano																1	1		3	
Pachygrapsus											1		1			3	2	1		2
large limpets(>10mm)		3				2	2	1	4	4	3	1	2		2					
S. purpuratus																1		3	4	
Nucella emarginata			1			1				1					1	10	12	6	3	12
Acanthina spp.						3	1		3	6			1		1	1	1	1		2
Tegula funebralis		4				40	44	42	34	50	2	21	11	5	5					
Ocenebra circumtexta																	1			
Lottia gigantea																	1	1	1	1
Littorina spp.	10-100	>100	10-100	10-100	<10						<10	<10	<10	<10	>10					

Owl Limpet *Lottia gigantea* plot summary at Trailers

Plot	Count	Mean size (mm)	StDev	MinSize	MaxSize	Density
1	30	63.00	19.49	22	89	9.551
2	25	59.80	20.86	15	89	7.959
3	27	39.74	20.56	15	84	8.596
4	37	48.78	13.45	18	69	11.780
5	14	40.57	15.44	22	73	4.457

Owl Limpet *Lottia gigantea* size distribution within plots at Trailers

Plot	%<20mm	%20-29mm	%30-39mm	%40-49mm	%50-59mm	%60-69mm	%70-79mm	%80-89mm	%>90mm
1	0.00%	13.33%	3.33%	3.33%	10.00%	23.33%	26.67%	20.00%	0.00%
2	4.00%	4.00%	16.00%	12.00%	0.00%	12.00%	40.00%	12.00%	0.00%
3	22.22%	18.52%	14.81%	7.41%	11.11%	18.52%	3.70%	3.70%	0.00%
4	2.70%	8.11%	16.22%	18.92%	32.43%	21.62%	0.00%	0.00%	0.00%
5	0.00%	28.57%	35.71%	7.14%	14.29%	7.14%	7.14%	0.00%	0.00%



Surfgrass Transects

Location Trailer **Site Code** SCTR
Date: 7-Jan-01
Recorders: David Kushner

Surf Grass Taxa	Transect 1	Transect 2	Transect 3
Rock	1	1	2
Egregia menziesii	1	2	
Corallina vancouveriensis	4	2	5
Erect coralline	1		1
Encrusting coralline		1	
Chondracanthus canaliculatus	2	5	4
Chondracanthus spinosus		2	
Prionitis spp.	2	3	5
Mazzaella affinis	1		
Phyllospadix sp.	84	79	79
Mytilus californianus	4	2	1
Phragmatopoma californica		1	1
Chthamalus/Balanus		2	1
Tetraclita rubescens			1
total	100	100	100

Willows Anchorage January 8, 2001, low tide -1.4 ft. @ 1505, No temperatures were taken, skies overcast with light rain, winds 5-10 SW, waves 2-3 ft., surge moderate. On site from 1230 - 1600 performing all standard monitoring protocols as well as motile invertebrate counts within photoplots and a general species census of the site. Two Black Oystercatchers and one harbor seal were observed during our visit.

The UC field station received 0.62 inches of rainfall the night before, closing the roads to driving. We hiked to Willows from the main ranch area arriving at 1230. Upon arrival, numerous purple sea urchin tests were observed at the high tide line and populations throughout the site were high, relative to previous visits. Sand erosion adjacent to the site was obvious and Plot 936, previously covered with sand, was nearly 1 meter above the current sand level. Similar to other sites monitored on this trip barnacle and *Littorina* spp. recruitment was visible. Extensive bleaching of *Endocladia muricata* was noted and nearly all plots within that zone documented this well. *Endocladia* plots were scored for both bleached and unbleached plants to accurately estimate the extent of bleaching, the categories were later added together to acquire the actual

Endocladia sp. cover. *Silvetia compressa* dominated the rockweed zone and plants were both healthy and expansive. *Hesperophycus californicus* plants were common and most were large. *Phragmatopoma californica* was abundant throughout the site and appears to be spreading. Mussel plots appeared healthy but remain a conglomerate of *Mytilus californianus*, *Tetraclita rubescens*, *Pollicipes polymerus*, and miscellaneous algae. Only one black abalone was observed during a 30-minute search of the site. In a separate 30-minute search 225 seastars were observed (216 *P. ochraceus*, 6 *P. giganteus*, and 3 *Asterina miniata*). *Lottia gigantea plots* contained numerous small individuals (<25mm) and appear relatively unchanged from the previous visit. Motile invertebrates were common and not very diverse. No *Tegula* spp. or *Ocenebra* sp. were observed. *Nucella emarginata* eggs were common as well as *Strongylocentrotus purpuratus* within photoplots. *Halidrys dioica* was abundant in the lower intertidal, typical for this site. Overall, macro algae were fairly sparse other than the monitored rockweeds and *Endocladia muricata*.

Photoplot summary – Mean percent cover by zone at Willows Anchorage (5plots/zone)

Site	Zone	Rock	Barnacle	Endocladia	Rockweed	Mussels	Misc Algae	Misc Animal
WA	Endocladia	39.0	1.2	52.6	0.0	0.0	6.8	0.4
WA	Silvetia	25.4	0.4	6.0	42.4	0.0	19.2	6.6
WA	Mussels	13.2	5.8	0.4	0.0	34.2	23.8	22.6
WA	Hesperophycus	58.0	4.0	3.2	27.8	0.0	6.4	0.6

SCWA fall 2000 Motile invertebrate counts

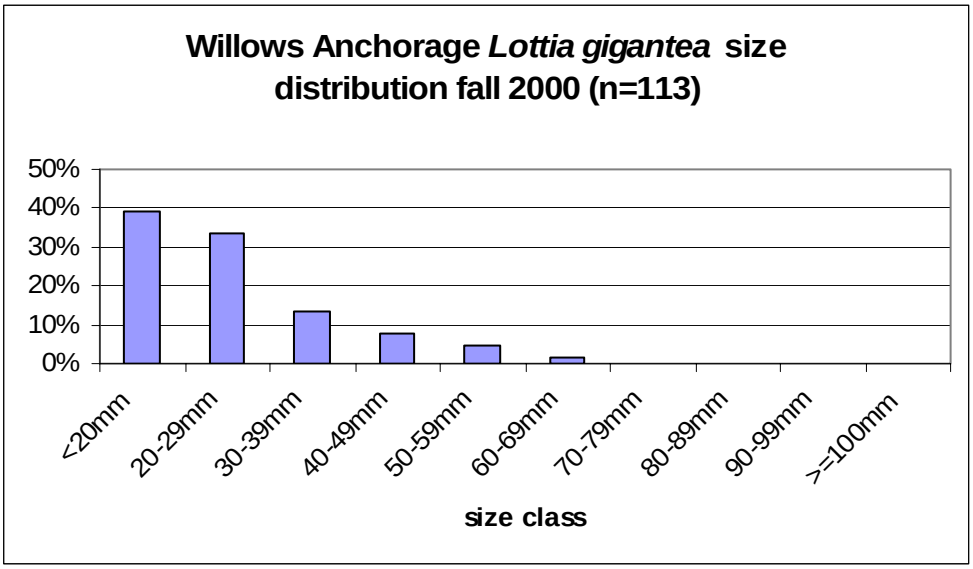
zone	Endocladia						Hesperophycus				Silvetia					Mytilus				
plot #	931	932	933	934	935	936	937	938	939	940	946	947	948	949	950	941	942	943	944	945
Lepidochitona spp.							4	2	9	2			3	14	5					
Nuttalina spp.												3	1		3					
Fissurella volcano																3		3	7	1
Pachygrapsus								1	2			1		1				3	5	
large limpets(>10mm)							1	2	4	5	5	3	1	3	8					
S. purpuratus										1						6	33	31	18	12
Nucella emarginata									2		1	5				6	17	4	27	11
Acanthina spp.								1	5			4	7	3	5					
Lottia gigantea																3	1	1	3	
Littorina spp.	>100	>100	>100	>100	>100	>100	<10	<10			<10	10-100	10-100	<10						
Mopalia sp.												1								

Owl Limpet *Lottia gigantea* plot summary at Willows Anchorage

Plot	Count	Mean size (mm)	StDev	MinSize	MaxSize	Density
1	17	27.82	11.07	15	60	5.412
2	21	22.19	7.83	15	42	6.686
3	45	24.29	10.08	15	56	14.327
4	19	27.32	14.11	15	56	6.049
5	11	31.73	16.09	15	61	3.502

Owl Limpet *Lottia gigantea* size distribution within plots at Willows Anchorage

Plot	%<20mm	%20-29mm	%30-39mm	%40-49mm	%50-59mm	%60-69mm	%>70mm
1	17.65%	47.06%	23.53%	5.88%	0.00%	5.88%	0.00%
2	57.14%	23.81%	14.29%	4.76%	0.00%	0.00%	0.00%
3	37.78%	42.22%	6.67%	8.89%	4.44%	0.00%	0.00%
4	52.63%	10.53%	15.79%	10.53%	10.53%	0.00%	0.00%
5	18.18%	36.36%	18.18%	9.09%	9.09%	9.09%	0.00%



Orizaba Cove, January 5, 2001, low tide 0.3 ft. @1256 hrs., Air temp. 19°C, water temp. 14°C, Skies mostly clear, wind < 5mph ESE, Waves 1-2 ft., surge light. We were on site from 1230 to 1430 hrs performing all standard monitoring except field scoring of photoplots. We did motile invertebrate counts within photoplots.

The site as a whole has lots of large barnacles' including *Chthamalus* sp., *Balanus* sp. and *Tetraclita rubescens*. Some barnacle recruitment, mostly *Chthamalus* sp., was obvious in several plots. *Hesperophycus californicus* plots were dominated by thick *Endocladia muricata* though all most plots had some *Hesperophycus* sp. present. *Silvetia compressa* plants were all small with new growth from the holdfasts evident. Motile invertebrates were numerous but not very diverse. *Ocenebra* sp. and *Nucella emarginata* were common. Small *Littorina* spp. were abundant. The mussel plots appeared healthy with a few small (10-20 cm) clearings obvious. Several of the mussel plot corner bolts were difficult to find and some were completely covered. Time was a limiting factor during sampling, as the boat needed to return to Prisoners Harbor to drop off David and begin its trip back to headquarters.

Photoplot summary – Mean percent cover by zone at Orizaba Cove, fall 2000

Zone	Rock	Barn	Tetraclita	Endocladia	Hesperophycus	Silvetia	Mussels	Leaf Barn	Misc Algae	Misc Animal	Tar
Barnacle	39.8	51.8	2.8	0.0	0.0	0.0	0.0	0.0	5.4	0.2	0.0
Rockweed	49.2	15.2	8.4	3.0	0.0	4.6	3.4	0.0	15.6	0.6	0.0
Mussels	6.6	1.0	2.2	0.0	0.0	0.0	74.6	1.0	13.8	0.8	0.0
Tetraclita	24.2	9.4	31.2	0.8	0.0	0.0	4.6	1.0	24.6	4.2	0.0
Hesperophycus	38.8	11.2	2.0	38.8	6.4	0.6	0.2	0.0	1.6	0.2	0.2

SCOC Fall 2000 Motile Invertebrate Counts

zone	Barnacle					Hesperophycus					Silvetia				
plot #	B1	B2	B3	B4	B5	He1	He2	He3	He4	He5	Pe1	Pe2	Pe3	Pe4	Pe5
Lepidochitona spp.												1		2	1
Nuttalina spp.											6		1	1	4
Fissurella volcano															
Pachygrapsus limpets(>10mm)															
S. purpuratus															
Amphissa versicolor															
Nucella emarginata	10			7		10	12			8	6		7	7	6
Acanthina spp.											1	7			
Tegula funebralis															
Ceratostoma nuttali															
Ocenebra circumtexta	1					1	8		2	6	8	3	6	10	4
Lottia gigantea															
Leptasterias hexactis															
Norrisia norrisi															
Littorina spp.	>100	>100	>100	>100	>100	>100	>100	>100	>100	>100	>100	>100	>100	>100	>100
Unid. chiton															

SCOC Fall 2000 Motile Invertebrate Counts

	Mytilus							Tetraclita		
plot #	M1	M2	M3	M4	M5	Te1	Te2	Te3	Te4	Te5
Lepidochitona spp.										2
Nuttalina spp.	5		5	4	8					
Fissurella volcano					1					
Pachygrapsus large limpets(>10mm)	3	1	1	1						
S. purpuratus			5	11						
Amphissa versicolor	1			6						
Nucella emarginata	4	5	3	3	2	22	6	1	10	4
Acanthina spp.										
Tegula funebralis										
Ceratostoma nuttali										1
Ocenebra circumtexta	12	8	4	3	20	15	11	12	18	3
Lottia gigantea									2	
Leptasterias hexactis					1					
Norrisia norrisi				1						
Littorina spp.						>100	>100	>100	10-100	>100
Unid. chiton		1	2							

Santa Barbara Island, January 22-23, 2001 (Database event #2000K)

PERSONNEL: Dan Richards, Marine Biologist, Channel Islands National Park
Derek Lerma, Biological Technician, Channel Islands National Park
Steve Fradkin, Coastal Ecologist, Olympic National Park

PROCEDURE: general procedures are outlined in the Intertidal Monitoring Handbook (Richards and Davis 1988). We arranged a special overnight trip on the PACIFIC RANGER. Two wreck divers and 10 VIPs took advantage of the trip to get to Santa Barbara Island. A large swell forced us to skiff passengers and gear ashore with the operation continuing until 1415 hrs. Nesting pelicans did not seem to be on the slope directly above Sea Lion Rookery; however, the large swell would have made work at the site doubtful and there were several hundred sea lions present. Working around the swell at Landing Cove, we were able to photograph all the photoplots and score nine plots the field. Motile invertebrates were counted within the photoplots. Derek managed to count motile invertebrates in 17 plots, which were difficult in the surge. There was no sea star or abalone count made. The temperature logger was successfully downloaded.

RESULTS:
January 22, 2001, Landing Cove, low tide -0.6 ft at 1454 hrs, wind calm, seas calm with 5 ft swell and heavy surge. We were on site from 1430-1630 hrs. difficult working conditions with the surge

Eight California sea lions, two Black Turnstones, two Black Oystercatchers and one Western gull were present in the cove. The rockweed plots had little *Silvetia* or other algae. *Porphyra perforata, Ulva* sp*. Chondracanthus canaliculatus, Mazzaella affinis,* and *Corallina vancouveriensis* dominated the plots. Red algal turf plots were mostly covered by *C. canaliculatus* and *Gelidium* sp. Plots 323 and 322 were primarily *Phyllospadix torreyi* with some *C. canaliculatus*, all growing over sandcastle worms, *Phragmatopoma californica*. Plot 324, also in the red algal turf zone, was primarily *Corallina vancouveriensis, Egregia menziesii* and *Gelidium* sp. Many small mussels were present in the southern area of the site. Plot 326 had some open spaces but the other mussel plots had almost 100% cover of mussels. The brown alga, *Endarachne binghamiae*, and microalgae dominated the barnacle plots.

None of the brass tags at this site are readable any longer. Repairs were impossible with the surge however. We were able to find all the plots except 329 which was shot in the approximate location (within cm) and the entire bench there is uniform in the mussel cover.

We could hear Xantus's murrelets calling at night. On 1/23 we made a dive off the south side of the island to collect lobster for bacterial swabs for a researcher. We returned to Ventura on 1/23.

Photoplot summary – mean % cover by zone at Landing Cove (5 plots/zone)

Zone	Bare Rock	Barnacle	Tetraclita	Endo-cladia	Silvetia	Mussels	Turfweed	Leaf Barnacle	Misc Algae	Misc Animal
Barnacle	25.4	6.2	14.2	2.6	0.0	7.0	0.0	0.0	44.2	0.4
Rockweed	29.6	7.0	0.8	0.0	2.2	3.8	0.0	0.0	54.2	2.4
Mussels	3.0	0.6	3.0	0.0	0.0	67.0	0.0	3.2	15.8	7.4
Red Algal Turf	1.0	0.0	0.0	0.0	0.0	0.0	63.8	0.0	28.2	7.0

SBLC fall 2000 Motile invertebrate counts

zone	Red algal turf					Silvetia					Barnacle					Mytilus	
plot #	320	321	322	323	324	310	311	312	313	314	315	316	317	318	319	328	329
Lepidochitona spp.										1							
Nuttalina spp.			2									3	1	2	1	6	7
Fissurella volcano				2													
S. purpuratus																6	1
Amphissa versicolor																	1
Acanthina spp.						2	1										
Ceratostoma nuttali																1	
Ocenebra circumtexta											3	9	10	12	3	4	9
Limpet >10mm		2				1	1	1		2							
Tegula aureotincta																1	
Littorina spp.*	<10					10-100	<10			<10	<10						1

**Littorina* numbers were estimated. Three Mytilus plots not counted.

Appendix C. General Species List

The species list contains presence/absence and relative abundance data for all species found at a site during the regular visit. Relative abundance values are subjective, relative to the entire site accounting for the appropriate habitat and based on observers' comparison to other areas. The time allotted to general species information gathering varied. Plot census observations were added to the general species list. When time and tide allowed, searches were made to include all the species that could be found on the rocky intertidal bench around a monitoring site. No general species list was collected for sites/dates not listed.

Abundance Ratings:
X - present, no relative abundance rating given
4 - abundant, organism present in higher than normal densities
3 - common, organism found over most of the site or in high density patches
2 - present, organism found in moderate numbers
1 - rare, few organisms found
0 - noticeably absent, an effort was made to look for an organism that was not found

Notes:
E eggs
D drift
S shell only